terremark
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Enterprise Cloud
Application Programming Interface

Version 2012-03-01

Revision History

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Comments and corrections are welcomed; please email to: ssddocumentation@terremark.com

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Advance to *2 Features of the Application Programming Interface*.

The Enterprise Cloud Application Programming Interface version 2012-03-01 is the first extension of the new Enterprise Cloud API begun with version 2011-07-01. With no backward compatibility to releases prior to version 2011-07-01, it is a complete departure from the VMware vCloud API, which permits the new API to expose most of the features of the user interface, Infinicenter Console.

The new API will operate alongside the previous API design, offered in versions 2.8, to permit time to migrate to the new API. Version 2.7 of the previous API design retires with this release. Version 2.8 will retire later in 2012.

The release for this version is 2.12.

1.1 What's New

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Advance to *1.2 Getting Started.*

New in 2012-03-01 are enhancements to existing functions and three new features. For a complete list of affected procedures and calls, see *8 List of Additions and Changes*.

1.1.1 Detached Storage

Individual virtual disks may be detached from and attached to virtual machines. Detached virtual disks may be managed from the API or Infinicenter Console. Failed detach and attach operations may be retried.

Return to *1.1 What's New.*

Return to *1 Introduction to the Application Programming Interface*.

1.1.2 Alert Notification of Real-Time Monitoring

An organization may monitor certain events within the environment and, when thresholds are crossed, have an email alert sent to a list of email addresses. The events and thresholds are system-defined: high processor or memory usage, and processor or memory bursting. The email list is user-defined. When an alert occurs, a threshold is crossed, users subscribed to that rule are notified by email of the condition.

Return to *1.1 What's New.*

Return to *1 Introduction to the Application Programming Interface*.

1.1.3 Copy Virtual Machines to the VM Catalog

A virtual machine in an environment may be copied to the VM Catalog. The catalog item may be copied into an environment to create new instances of the virtual machine.

Return to *1.1 What's New.*

Return to *1 Introduction to the Application Programming Interface*.

1.1.4 User Experience Improvements

Implements the Get Administrative Organizations call. Session persistence methods of Cookie Insert, Session Cookie, and SSL Session added for Internet services. For procedures in which the call returns a task, added a step to poll the task for the outcome of the call.

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1.2 Getting Started

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Advance to *1.3 Enterprise Cloud Entities*.

For organizations just starting with the Enterprise Cloud Application Programming Interface, this section will get you started.

Return to *1 Introduction to the Application Programming Interface*.

1.2.1 Become Familiar with Key Concepts

The reader is encouraged to carefully review the introductory sections, sections 1 through 5, before delving into the references. Many important requirements and restrictions are described only in these sections. A thorough understanding of these topics will avert many potential implementation issues.

After reviewing the introductory sections, a brief review of the use cases in section *6 Application Programming Interface Programmer's Guide* may be helpful in associating API calls to the Infinicenter Console operations. The structure of the Programmer's Guide follows the layout of the Infinicenter Console.

Return to *1.2 Getting Started.*

Return to *1 Introduction to the Application Programming Interface*.

1.2.2 Begin a New API Session

After reading section *3 Security Model*, the reader will appreciate the importance of beginning each session with the preparatory calls of **Get Time** and **Get Versions** as described in *6.2 Preparation*.

Return to *1.2 Getting Started.*

Return to *1 Introduction to the Application Programming Interface*.

1.2.3 Enter the API

As discussed in *4 Call Concepts*, the Enterprise Cloud Application Programming Interface uses Links and Actions, each with an opaque hypertext reference or `href`, to guide the user through the API. The **Get Organizations** call is the entry point for the API. The call returns links and references, directly or indirectly, to all other branches of the API as described in *6.2 Preparation*.

Return to *1.2 Getting Started.*

Return to *1 Introduction to the Application Programming Interface*.

1.2.4 Safely Develop with the Live Specification

As a convenience to Application Programming Interface users, Terremark offers the Live Specification to assist in creating applications with the API. The complete implementation of the API, every call, is available. While the data is static, the responses are accurately constructed. In many cases, such as for edits and creates, responses are tailored to important input values. See *5.3 Live Specification* for further information.

Return to *1.2 Getting Started.*

Return to *1 Introduction to the Application Programming Interface*.

1.2.5 Explore the API with the Cloud API Explorer

The Cloud API Explorer is a companion to the Application Programming Interface. The API Explorer enables easy interaction with the API from a browser. The Cloud API Explorer should be used in conjunction with this document and the *Enterprise Cloud Application Programming Interface Cloud API Explorer* for the version you are using. The Cloud API Explorer documentation is available on the Terremark Enterprise Cloud Knowledgebase at:

http://support.theenterprisecloud.com/kb/default.asp?id=533&Lang=1&SID=

Return to *1.2 Getting Started.*

Return to *1 Introduction to the Application Programming Interface*.

1.3 Enterprise Cloud Entities

The Terremark Enterprise Cloud API provides a programmatic interface to the Enterprise Cloud infrastructure that can be used by any Terremark Enterprise Cloud customer. The Enterprise Cloud infrastructure is based on discrete entities and the relationships between them. The block diagrams in the sections that follow present the entities and the relationships between them.

The names of the entities in the list below are links to the section for that entity in *7 Application Programming Interface Reference Guide*.

- Alerts
- API Key
- Audit Log
- Backup Internet Service
- Bandwidth
- Business Operation
- Catalog
- Compute Pool
- Contact
- Detached Disk
- Environment
- Firewall Log
- Firewall Rule
- Group

- Internet Service
- IP Address
- Layout
- Location
- Monitor
- Network
- Network Host
- Network Summary
- Node Service
- Operating System Family / Operating System
- Organization / Administrative Organization
- Physical Device
- Public IP
- Resource
- Retry Operation
- RNAT
- Role
- Row
- SSH Key
- Support Ticket
- Tag
- Task
- Template
- Trusted Network Group
- User
- Virtual Machine

Network host is a term that aggregates virtual machines and physical devices.

Return to *1 Introduction to the Application Programming Interface*.

1.4 Enterprise Cloud Structure

The Enterprise Cloud Structure begins with the organization, the subscriber of the Enterprise Cloud resources. Organizations and its resources are not shared with any other subscriber. An organization has operational entities and administrative entities. Operational entities are the logical and physical aspects of creating, operating, deleting, and administering servers and their supporting infrastructure. Administrative entities relate to administration and control of the organization regarding users, access and permissions, usage, keys, and user-provided virtual machines.

In the diagrams below, the block color indicates the nature of the link on the block:

Links to a structure diagram for that entity.

Links to the section in the Reference Guide for that entity.

No link; not a separate entity but is descriptive

In the diagrams below, the arrow type indicates the nature of the relationship:

Shows an ownership relationship between entities.

Shows a contribution from one entity to another.

Shows a logical relationship from one entity to another.

Continuation connector for when arrows cannot reach.

Return to *1 Introduction to the Application Programming Interface*.

1.5 Organization Structure

An organization may subscribe to one or more environments, which are discussed in *1.7 Environment Structure*. While environments cannot span locations, an organization may have more than one environment in a location. The organization defines tags, which are explained further in *1.6 Tag Structure*.

In addition to hosting the environments, data center locations host the catalog, which is described in *1.15 Catalog Structure*.

An organization has users permitted to administer the computing resources, create new servers, monitor performance, view the resources, run reports, and so on. The organization creates users, which are described in *1.12 User Structure*. Roles, which are described in *1.13 Role Structure*, grant users access and permission to business operations.

Bandwidth, which is described in *1.14 Bandwidth Structure*, may be retrieved for review from the administrative organization. Bandwidth usage is by period. The previous twelve periods are retained.

An alert signifies an event in the operational environment. Examples of events include a change in burst status or resource utilization exceeding a threshold.

Secure shell (SSH) permits secure access to the virtual machine and requires a key for access, typically for machines running a variant of Linux or UNIX operating systems. The administrative organization manages the secure shell keys.

Support tickets are requests for assistance from technical support and, after submission to the help desk system, are imported into the organization. The list maintains both open and closed support tickets. The support ticketing and help desk systems are not integrated in the Amsterdam and Brazil data centers. An organization with an environment in Amsterdam or Brazil will not have access to support tickets in the API for any environments.

Return to *1 Introduction to the Application Programming Interface*.

1.6 Tag Structure

Tags are descriptors defined by the organization. Tags may be applied to any network host: virtual machines and physical devices. Tags are useful to help the organization identify the purposes to which servers and devices may be deployed, services available, or any other function that the organization may wish to label.

Return to *1 Introduction to the Application Programming Interface*.

1.7 Environment Structure

Network summary, which is described in *1.10 Network Summary Structure*, is defined at the environment level. Compute pools, which are described in *1.8 Compute Pool Structure*, are a specific block of resources that can be devoted to virtual machines. Physical devices are routers, servers, and storage arrays provided by the organization and installed within the location hosting the environment. Layouts, which are described in *1.9 Layout Structure*, are two-way, logical containers for virtual machines and physical devices. Layouts assist the organization in logically and visually organizing resources. Both environments and compute pools contain layouts. Changes to physical devices create tasks.

The environment records tasks, which are events occurring within an environment. Tasks include such things as creating a server, importing a virtual machine, changing a configuration, creating an Internet service, and so on. Tasks are a history of changes to the environment. Tasks contain the type of task, the entity against which the task was performed, the status, errors, who initiated the task, and the start and end times.

Some operations require substantial time to complete and, should they fail, may be retried. Retry Operation is an outstanding failed operation for which retries are possible.

Return to *1 Introduction to the Application Programming Interface*.

1.8 Compute Pool Structure

Virtual machines are created from resources subscribed in advance by the organization. Compute pools represent a specific capacity of computing resources: processor, memory, and storage. Virtual machines may be created beyond the capacity of a compute pool and bursting enables temporarily increasing processor and memory past subscribed resources. However with too many active and running virtual machines, physical limitations will cause performance to degrade. When the resources of a compute pool become constrained, the organization may subscribe to another compute pool within that environment. Compute pools may also be used by an organization to isolate specific servers. The organization might also wish to take advantage of a compute pool with higher limits on virtual machines. Compute pools can assist the organization with all of these situations. Resources permits tracking the allocation of physical resources in the compute pools as well as enable and disable bursting, which is the temporary allocation of processor and memory beyond subscribed limits.

A compute pool has a list of available templates. Templates are virtual machine images configured with specific customization options and loaded with a guest operating system. Templates improve efficiency of virtual machine creation. Templates are available for ready instantiation in the organization's compute pool. Virtual machines may be customized from the template or catalog item from which they were created. Once created, virtual machines have additional configuration choices. Virtual machines must have a guest operating system. A compute pool has a specific list of available operating system families, which is described in *1.11 Operating System Family Structure*, and for each family specific versions supported within that compute pool. Layouts, which are described in *1.9 Layout Structure*, are two-way, logical aggregations of virtual machines and physical devices to aid the organization in surveying those resources. Both environments and compute pools contain layouts. Changes to virtual machines and to bursting create tasks. A non-system disk on a virtual machine may be detached from or attached to a virtual machine, and may be managed within the compute pool with which they are associated.

Return to *1 Introduction to the Application Programming Interface*.

1.9 Layout Structure

As organizations grow their commitment to the cloud, the number of servers may make the logical structure of their environment difficult to remember. Layout allows organizations to organize their devices (both physical and virtual) into rows and groups so the environment can be surveyed easily from visual and logical perspectives. Rows and groups help to logically view similar servers together. Each environment has one or more rows. Each row has one or more groups. Rows and groups have no physical representation; the organization defines what each row and group represents.

Physical devices are servers, routers, high-availability routers, and storage provided by the customer. They are installed in a physical location and housed by Terremark. Physical devices are assigned to an environment, row, and group in the same manner as virtual machines.

The layout is effectively defined at the environment. The layout from the environment view presents all rows, groups, virtual machines, and physical devices in the environment. The layout from the compute pool view is a subset of the environment view and, while presenting all the rows and groups, presents only virtual machines allocated from the compute pool. Physical devices are not allocated from compute pools and therefore appear only on the environment view.

Return to *1 Introduction to the Application Programming Interface*.

1.10 Network Summary Structure

The network detail is the largest, most complex entity in the Enterprise Cloud. Networks, public IPs, firewall rules, Internet services, and node services comprise the primary entities with the remaining entities providing supporting relationships and services. In the network, the organization subscribes to and defines two types of networks:

- Demilitarized zone (DMZ) network on which servers are behind the firewall but permit access from the public Internet.
- Internal (INT) network on which access is enabled to the servers for such reasons as administration and backup but is isolated from the public Internet.

Trusted network group defines a group of hosts, networks, or a combination of hosts and networks on the public Internet that are permitted access to the Internet service or services to which it is bound on the demilitarized zone network. For example, the public subnet used by the San Diego office of the organization is defined as a Trusted Network Group and is bound to an Internet Service providing FTP. The only access to FTP will be to addresses originating from the San Diego office. Changes to trusted network groups create tasks.

Organizations subscribe for Public IPs, which are public IP addresses on which to expose Internet Services to the public Internet.

Firewall rules create access through the firewall for specific protocols to identified servers. The default on the firewall is to deny all traffic. Firewall rules are also referred to as access control lists (ACL). Two types of firewall rules are defined: Internet services and custom. Firewall rules for all Internet services are created automatically when an IP address on a node service is bound to the Internet service. The API may create additional custom firewall rules to deny or to permit. Rules that deny further constrain traffic from the public Internet to a host or network. Rules that permit allow internal traffic from a network or host to another host or network. Changes to firewall rules create tasks.

Firewall logs may be sent to any server on the organization's network, on either DMZ or INT, or to an external IP address. The organization may then easily monitor firewall alerts from their network. Changes to firewall logs create tasks.

Internet services bind a public IP address to a specific service, or protocol, thus exposing that service to the Internet. Additional configurations appropriate to the service, such as session timeout, are defined on the Internet service. Changes to Internet services create tasks.

A backup Internet service allows pre-configuring a binding between an Internet service, with its node services, and an “empty” public IP. That backup Internet service is then assigned to an Internet service. Should that Internet service fail or be taken out of service, the load balancer automatically redirects traffic to the backup internet service. When the Internet service is restored, the load balancer resumes traffic to the Internet service and the backup Internet service returns to quiescence. Changes to backup Internet services create tasks.

RNAT is Reverse Network Address Translation. RNAT establishes an association between a public IP address and either a private IP network or a private IP address. This enables outbound traffic to the public Internet, through the associated public IP address, from that network or device. Networks are always associated with a public IP. When a network is created, it is automatically associated to the default RNAT. The first public IP address defined in an environment is the default RNAT; traffic not otherwise associated to a public IP, will use the default RNAT. An RNAT may be defined from any network or device in the environment to any public IP in the environment. This enables substantial flexibility in managing traffic and bandwidth through the public IP addresses. Changes to RNATs create tasks.

Monitors provide the means for an Internet service to understand which node services remain available to respond to requests. Monitors are defined on an Internet service and bound to all the node services responding to that service. Changes to monitors create tasks.

Node services bind an Internet service to specific IP addresses. Changes to node services create tasks. The IP address resides on a specific Network Host, either a virtual machine or a physical server. The virtual machine or physical server runs the application that responds to that Internet service.

Return to *1 Introduction to the Application Programming Interface*.

1.11 Operating System Family Structure

Operating systems are grouped in families with variations within the family. Families are defined by the compute pool because of possible dependencies within the compute pool that limit selections. For each family, specific operating system variants are supported within that compute pool. For example, the Red Hat Enterprise Linux family might have Red Hat Enterprise Linux 32-bit and Red Hat Enterprise Linux 64-bit operating systems. A Windows family might have Windows Server 2003 and Windows Server 2008 operating systems.

Each operating system in a compute pool has constraints on resources supported by that operating system for processors, memory, disk counts, disk size, and networking.

Return to *1 Introduction to the Application Programming Interface*.

1.12 User Structure

The organization creates users and grants access and permissions through the interactive interface or the API. Users may also be created from contacts. Application Programming Interface users have key pairs assigned for using CloudApi authentication as described in *3.2 CloudApi Authentication*. Users are assigned roles by which those access and permissions to business operations are governed. Changes to users are recorded in the Audit Log.

Return to *1 Introduction to the Application Programming Interface*.

1.13 Role Structure

Roles govern the access and permissions to business operations by users at the organization level and at the environment level. Business operations are tasks within the Enterprise Cloud. Users may have only one or no organizational role and may have one or no environmental role for each environment in the organization. Roles may differ between environments. System roles are defined by the Enterprise Cloud and may not be modified. The organization may also create custom roles specific to their organizational needs. Roles are assigned to users.

Return to *1 Introduction to the Application Programming Interface*.

1.14 Bandwidth Structure

Bandwidth is a limited resource and organizations will monitor usage. Bandwidth entity provides information about inbound and outbound traffic going through the organization's public IP addresses. It provides the information for monthly periods in 95th percentile and total traffic formats.

Return to *1 Introduction to the Application Programming Interface*.

1.15 Catalog Structure

Catalog allows organizations to migrate their workloads from external environments into Enterprise Cloud. Catalog also enables use of custom virtual machines as an alternative to Terremark-provided templates. Catalog provides a means to upload a complete virtual machine to their location.

Perhaps the organization has a server currently defined in their internal environment they wish to migrate to Enterprise Cloud or perhaps they wish to build the complete service in a closed environment before deploying. When the virtual machine is ready, the organization uploads the virtual machine files to a catalog item within their

catalog. They may then import that catalog item into their environment repeatedly from their catalog. When a catalog item is no longer needed, the organization may remove the catalog item to free storage space for new catalog items.

An entry in the catalog consists of an OVF file and one or more VMDK files. An Open Virtualization Format (OVF) file describes the virtual machine: required virtual disks and required virtual hardware configuration, including CPU, memory, networking, and storage. The Virtual Machine DisK (VMDK) is a file that encodes a single virtual disk from a single virtual machine. The OVF file and all the described VMDK files form the virtual machine and the VM Upload catalog item. As discussed in *1.8 Compute Pool Structure*, a VMDK may be detached from or attached to a virtual machine. This is not permitted from a catalog entry; the catalog entry must first be instantiated as a virtual machine before managing an attached VMDK.

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The Application Programming Interface implements these design features.

2.1 Unified API

The API unifies the application programming interface between Terremark cloud products: Enterprise Cloud and vCloud Express. Everyone uses the same specification to access their environment. Most actions from the respective user interfaces, from both the Environment tab and the My Account tab, are available through the API. The distinction between base and extension calls disappears. All calls and all versions use the same base URL, the same URN, and are in the same namespace. In addition, physical devices are supported. All messages use properly formed XML. See *10 Schema* for the schema.

Return to *2 Features of the Application Programming Interface*.

2.2 Authentication

The API uses a stateless authentication implementation; every request passes authentication in the header. Support for basic username and password authentication is mainly for backward compatibility and easy addition of new customers. The more secure message-digest authentication is strongly encouraged.

Each call carries a UTC timestamp. Requests delayed for an extended period after the timestamp or submitted too far in advance of the timestamp receive an error. To enable time synchronization, the API permits an anonymous call to retrieve the server time. Determine the difference between local time and server time and apply the difference to each call in a session.

The API supports HMAC-SHA1, HMAC-SHA256 and HMAC-SHA512 hash algorithms for the message digest. In recent years weakness in HMAC-SHA1 has been reported and use of HMAC-SHA256 or HMAC-SHA512 is encouraged.

The API also supports a message-digest of the contents of request bodies. The content-hash is required for the message-digest authentication and optional for basic authentication.

Return to *2 Features of the Application Programming Interface*.

2.3 Versioning

The URI for the API remains constant across versions. The version is passed in the header of every request. Any active version may be used. Deprecated versions are accepted for a limited time to provide time to migrate applications to an active version before retirement of deprecated versions. Use of an invalid version, including retired versions, will result in an error. To verify support for the desired version, the API permits an anonymous call to retrieve the active versions.

Return to *2 Features of the Application Programming Interface*.

2.4 Errors

Error responses return additional detail regarding the nature of the error beyond the HTTP error returned in the header. Every method call that results in an error will not return the default HTTP error status code but will return the appropriate HTTP status code. Error responses include a HTML body with a textual error message (message), the HTTP error code (majorErrorCode), and a custom error code (minorErrorCode). Example responses, without the HTTP header:

```
<Error message="Catalog item with that name already exists." majorErrorCode="409"
 minorErrorCode="CatalogItemAlreadyExists"/>
<Error message="Machine is already powered on." majorErrorCode="400"
 minorErrorCode="VmAlreadyPoweredOn"/>
```

Error messages are listed in *9 Error Codes*.

Return to *2 Features of the Application Programming Interface*.

2.5 API Users

The API permits Enterprise Cloud console users' access to the API. However, the API has a more robust and more secure authentication mechanism in which users of the API, declared as API users, are authenticated in a manner different from the Enterprise Cloud console. API users are created specifically and exclusively as users of the API. This simplifies the creation and maintenance of API users and simplifies the use of a separate authentication model using private keys. The keys are generated and administered through the Enterprise Cloud console. An API user may have multiple, active keys assigned. Keys may be deactivated or deleted to maintain security with personnel change. This permits great flexibility to the organization.

An API user is a “user” in that they:

- Have specific access rights,
- Their actions are audited, and
- Access can be disabled or removed.

An API user is not, however, a “user account” in that they:

- Do not participate in the registration process nor receive invitations,
- Do not have email addresses,
- Do not have a password,
- Do not have access to the user interface, and
- Do not have VPN access.

Return to *2 Features of the Application Programming Interface*.

3 Security Model

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Advance to *4 Call Concepts*.

The API provides access to the configuration of the operating environment for the organization. The API must limit access to only verified applications. Every request except **Get Time** and **Get Versions** must be authenticated and must include the time of transmission and the version of the content. **Get Time** and **Get Versions** enable the user to synchronize time and determine active versions in support of, and prior to, authentication.

3.1 Basic Authentication

The API accepts HTTP Basic authentication, a username and password in the header encoded using Base64. The encoding ensures proper transmission through the network and provides no security; the username and password are, essentially, transmitted in plain text. The risk is miniscule as the API is transported via TLS/SSL; a listener gaining access to the data stream is extremely unlikely. Basic authentication is provided primarily for backwards compatibility.

Return to *3 Security Model*.

3.2 CloudApi Authentication

The API offers more robust authentication using a Hash-based Message Authentication Code (HMAC) in the message header. HMAC combines a cryptographic hash function with a private key, shared between only the sender and receiver. A cryptographic hash function takes a block of text and returns a fixed-length bit string. The cryptographic hash function is designed such that:

- It is easy to compute,
- It is infeasible to create a message to match a given hash,
- It is infeasible to alter a message to match the hash, and
- It is infeasible to find two messages that give the same hash.

A HMAC assures integrity and authentication; the text has not been altered in transit and only those knowing the secret key could produce the text.

Not every request in the API has a body. The API uses the URL and HTTP header to form the text for the hash as described in *5.6 Authentication*. For messages with a request body, the API can ensure the integrity of the message body. A message digest is created over the body of the request and the message digest placed in the header as

described in *5.16 Content Digest*. The content header digest header field is included in the HMAC, thus assuring the integrity of the message body.

Return to *3 Security Model*.

3.3 Keys

Each API user associates with one or more access keys to use as an identifier in the header. The access key is an opaque identifier; by itself it is a meaningless string of 32 characters. The private key is a random 64 byte string that is Base64 encoded to an 88 byte string. One access key and one private key are permanently associated at the time of creation. Only users with an administrator role may generate and manage keys. The administrator may create as many key pairs as desired. Key pairs may be deactivated at will should the administrator deem it necessary.

The access key and private key are generated together during a secure HTTPS online session with the Enterprise Cloud console. Only the access key is presented on the screen but when the copy button is pressed for an access key, the access key-private key pair will be presented. The private key may then be copied to the clipboard. It is the responsibility of the user to transfer the contents of the clipboard to a secure, yet usable, location. The key pair may be copied as many times as necessary should a key be lost but not compromised.

Return to *3 Security Model*.

3.4 Temporal Security

The API security model requires the time in the HTTP header for CloudApi authentication. Any message delayed for an extended period after the time stamp, or submitted too far in advance of the timestamp, in the message header relative to the current server time is rejected with a 403 FORBIDDEN response. This reduces the window of opportunity for replay attacks. Users of the API should request current server time using the **Get Time** call, calculate the time difference between clocks, and adjust the time stamp in all messages in the session accordingly.

Temporal security is not applied to Basic authentication.

Return to *3 Security Model*.

4 Call Concepts

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4.4 Actions 31
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Advance to *5 Call Constructs*.

The Enterprise Cloud API uses a representational state transfer architecture using conventional XML messages. This permits using a browser to read the messages. Two essential call types are supported: links and actions. Links enable inquiry on an entity or a collection of entities. Actions create, remove, or modify an entity. Actions also enable or disable some features. Entities include such objects as: organizations, environments, virtual machines, tasks, and users.

4.1 Call Naming Convention

The naming convention for calls used in this document follow basic rules, which may help find the call needed. The first word of the call indicates whether the call retrieves information about an object, `Get`, or performs an action an object, `Action`. The next part indicates the object retrieved or acted upon. Generally, the object is an entity listed in *1.3 Enterprise Cloud Entities*, such as `Organizations` or `Trusted Network Groups`, always plural. Occasionally the object may be a feature, such as `Bandwidth`. For calls that retrieve information, the rest of the call indicates increasing specificity of what might be retrieved. For example, the call `Get Internet Services by ID` retrieves the entity Internet service, specifically `by ID`. Or the call `Get Compute Pools Usage Memory Detail` retrieves for the entity `Compute Pools` specifically the `Usage`, more specifically for `Memory`, and most specifically the `Detail` in the call.

Type	**Entity**	**Specifics →**		
Get	Internet Services	By ID		
Get	Compute Pools	Usage	Memory	Detail

For calls that act on an object, the action appears after the name of the object, such as `Remove` in `Action Monitors Remove`. The rest of the call indicates increased specificity of the action, such as `Burst` of `Memory` in `Action Resources Enable Burst Memory`.

Type	**Entity**	**Action**	**Specifics →**	
Action	Monitors	Remove		
Action	Resources	Enable	Burst	Memory

Return to *4 Call Concepts*.

4.2 Request Methods

The HTTP request method for a Link is always `GET`. The HTTP request method for an Action varies by the action requested. The HTTP request method for an Action of `edit` is always `PUT`. The HTTP request method for an Action of `remove` is always `DELETE`. The HTTP request method for any other Action is always `POST`.

Return to *4 Call Concepts*.

4.3 Links

`Link` elements have three attributes. They always contain a hypertext reference, `href`, to the entity, expressed as a relative URL. The `href` is an opaque reference and should never be parsed. They contain a type definition, `type`, expressed as an HTTP Content-Type. See *5.5 Header* for more information regarding the API Content-Type. They always include a relationship identifier, `rel`, to indicate the relationship from the entity in the response to the entity in the link. Possible values are: `down`, the entity in the response owns the entity in the link; `up`, the entity in the link owns the entity in the response; and `alternate`, the entity in the link is an alternate view of the entity in the response. Paging also offers four other values: `first`, `previous`, `next`, and `last`.

rel	Interpretation
up	The entity in the link owns the entity in the response.
down	The entity in the response owns the entity in the link.
alternate	The entity in the link is an alternate view of the entity in the response.
first	The link is a path to the first page in the pages of responses.
previous	The link is a path to the previous page in the pages of responses.
next	The link is a path to the next page in the pages of responses.
last	The link is a path to the last page in the pages of responses.

Return to *4 Call Concepts*.

4.4 Actions

`Action` elements have four attributes. They always contain a hypertext reference, `href`, to the action, expressed as a relative URL. The `href` is an opaque reference and should never be parsed. They always contain a descriptive name, `name`, which describes the nature of the action. They may contain a type definition, `type`, expressed as an HTTP Content-Type. See *5.5 Header* for more information regarding the API Content-Types. They may have an `actionDisabled` attribute, which may have one of two values: `noAccess` or `disabled`.

The `type` attribute appears only on actions that require a request body. The request body must be an entity of the type described in `type`.

The `actionDisabled` attribute will have a value of `noAccess` when a user does not have permission to perform the action. For example, for a user with read-only access, all actions have `actionDisabled="noAccess"` set. The attribute will have a value of `disabled` when the action is contrary to business rules. For example, the action virtual machine

with `name="power:powerOff"` has `actionDisabled="disabled"` when the virtual machine is currently powered off; a virtual machine, which is currently off, may not be powered off; it may only be powered on. If both conditions apply, actions have `actionDisabled="noAccess"` set. If neither condition applies, the attribute will not appear.

Note: Any action may have the `actionDisabled` attribute if the business rules apply.

In *7 Application Programming Interface Reference Guide* the attribute `type` appears on all actions with a request body. The attribute `actionDisabled` appears only when the example has an action disabled for business rules.

The form of `name` is context-sensitive. When an action is within the entity on which it acts, the action is a single word because the entity on which it acts is apparent from the context. Hence, the `name` of actions under `User` would be simply `edit` or `remove`; the actions are in the context of `User` and therefore it is this `User` that will be edited or removed. When the action is in the context of one entity but acting on another entity, the first word of `name` describes the act and the rest of `name` is the entity on which acted. For example, in the admin/organization context, an action for the SSH Keys contains the `name` of `createSshKey`; the first word, `Create`, is the action and the rest of the name, `SshKey`, describes the entity on which the action is performed.

Actions of `create` and `edit` will generally return the entity on which action was performed in the body of the response. Some Actions, which initiate asynchronous tasks, will return the task in the body of the response. The task subsequently may be queried to determine the outcome of the asynchronous task.

Return to *4 Call Concepts*.

4.5 Success Status Codes

HTTP status codes are specific to the activity. Links return a 200 OK status when the desired entity is returned. Actions return a 201 CREATED status in response to a successful `create` or `edit` and the header has a hypertext reference to the entity in the `Location` header field. Actions return a 202 ACCEPTED status in response to actions performed asynchronously and the header has no `Location` header field. Actions return a 204 NO CONTENT status in response to actions which require no response body. Actions return a 210 NO OPERATION in response to edits in which no changes have been made.

Return to *4 Call Concepts*.

5 Call Constructs

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Advance to *6 Application Programming Interface Programmer's Guide*.

The Application Programming Interface presents common call constructs for every call.

5.1 Terremark URL

The Terremark Enterprise Cloud architecture uses a URI/URL to identify an Enterprise Cloud provider and the entities owned by that provider. This URL is unique to each provider or entity within the provider. Any hypertext reference (`href`) in a response is always relative to this base URL. The base Terremark URL is:

```
https://services.enterprisecloud.terremark.com
```

Return to *5 Call Constructs*.

5.2 Terremark Resources

To obtain the desired resource, you append the resource identifier, typically obtained from the `href` attribute, to the base URL. For example, to request the time, you just append "/time/" to the base URL.

```
https://services.enterprisecloud.terremark.com/time/
```

The call is always written in "lower camel case" style or medial capitals initial lowercase in this document. If the call operates on one entity, an identifier may be required to specify the particular entity. The identifier is then added after the resource.

```
https://services.enterprisecloud.terremark.com/organizations/1
```

Entity resources are named in the plural with the identifier pointing to a specific entity. Catalog and List are, by definition, a collection and are singular. Calls may operate on a hierarchical structure of entities, each of which will follow the same rules as above. To obtain the catalog for location 1 of organization 1, one would call:

```
https://services.enterprisecloud.terremark.com/admin/catalog/organizations/1/locations/1
```

Return to *5 Call Constructs*.

5.3 Live Specification

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5.3.2 Authentication 35
5.3.3 Signature Generator 36

Advance to *5.4 Conventions*.

As a convenience to Application Programming Interface users, Terremark provides a tool to assist in creating applications with the API: the Live Specification. The complete implementation of the API is available on the Live Specification; every call is available. The data is static but responses are accurately constructed. In many cases, such as for edits and creates, responses are tailored to important input values.

Return to *5 Call Constructs*.

5.3.1 Access

The Live Specification is available through HTTP or HTTPS. For the Live Specification, the Terremark URI is:

```
https://livespec.enterprisecloud.terremark.com
```

For example, the Action Layout Groups Create call for Environment 1 in this document has a URI of:

```
https://services.enterprisecloud.terremark.com/layoutGroups/environments/1/action/createLayoutGroup
```

For the Live Specification the URI must be:

```
https://livespec.enterprisecloud.terremark.com/layoutGroups/environments/1/action/createLayoutGroup
```

Return to *5.3 Live Specification*.

Return to *5 Call Constructs*.

5.3.2 Authentication

The API supports two methods of authentication. The primary authentication method for the API is a more secure and more robust authentication method called CloudApi authentication. The API also supports Basic authentication: the familiar username and password. Four types of users are supported:

- Full Access: Every function is available
- Readonly Access: Only retrieval operations are available.
- No Access: The user is defined but is not permitted access.
- Not Found: The user is not defined in the Live Specification.

The CloudApi authentication method uses an access key, a private key, and cryptologic function to authenticate the user.

For CloudApi authentication with the Live Specification, the following access key and private key are effective:

- Full access is available to:
  access key: `33333333333333333333333333333333`
  private key: `3333333333333333333333333333333333333333333333333333333333333333`
- Readonly access is available to
  access key: `11111111111111111111111111111111`
  private key: `1111111111111111111111111111111111111111111111111111111111111111`
- No access is available to
  access key: `22222222222222222222222222222222`
  private key: `2222222222222222222222222222222222222222222222222222222222222222`
- Not found access is available to any other access key and private key.

For Basic authentication, the following username and password are effective:

- Full access is available to any username, except as noted below, with the password `T3rr3m@rk`.
- Readonly access is available to the username `readonly@terremark.com` and the password `T3rr3m@rk`.
- No access is available to the username `noaccess@terremark.com` and the password `T3rr3m@rk`.
- Not found access is available to the username `notfound@terremark.com` and the password `T3rr3m@rk` or to any username that does not have the password `T3rr3m@rk`.

Return to *5.3 Live Specification*.

Return to *5 Call Constructs*.

5.3.3 Signature Generator

The API requires authentication in every call included as part of the HTTP header. To assist in creating the headers correctly, Terremark has created an online tool that will take a few inputs regarding the call and generate the appropriate headers.

The Signature Generator is available at:

```
https://livespec.enterprisecloud.terremark.com/SignatureGenerator.aspx
```

Note: The Signature Generator strips whitespace characters (spaces, newline characters, tabs) trailing the final character of the request body. Because the body is XML, the final character is always a greater than symbol:>. Please ensure that any whitespace characters are removed at the end of the request body.

For CloudApi authentication, follow these steps:

For Basic authentication, the credentials appear as:

Return to *5.3 Live Specification*.

Return to *5 Call Constructs*.

5.4 Conventions

In this document, to assist in discerning requirements of calls and to segregate from descriptions, the following conventions apply:

- Expository text is in 11 point Calibri, as in this paragraph
- Code and call text is in `9 point Consolas`
- Call names in bold are links: **Get Organizations**
- Document heading references in italics are links: *5 Call Constructs*
- Replaceable parameters in a call are enclosed in braces: `{}`
- Replaceable parameters will have a description of the parameter within the braces: `{catalog name}`
- Calls too long for a line will be broken with, but shall not include, an ellipsis: …
- Literal text to be entered will be enclosed in double quotes: " "
- Literal text and replaceable parameters may be mixed in double quotes: "{network address}/{network prefix length}"
- A required literal space character may, to prevent ambiguity, be represented with a space symbol: ␣
- Any other whitespace outside quotes is for readability
- Repetitions of XML elements, which are large blocks of text, are represented by a vertical ellipsis: ⋮
- The newline character, the LF character of hexadecimal 0x0A or decimal 10, is represented by: `\n`
- Choices are separated by the vertical bar: |
- Choices are separated from the vertical bar by spaces for readability
- Optional features are enclosed in brackets: `[ ]`

Return to *5 Call Constructs*.

5.5 Header

Get Time and **Get Versions** have no required header fields.

All other API requests must contain a header. Header fields required in every such request are:

Header Field	Description
Authorization	The authorization token as described in *5.6 Authentication*.
Date	The date and time of message transmission as described in *5.7 Date*.
x-tmrk-authorization	The authorization token as described in *5.6 Authentication*.
x-tmrk-date	The date and time of message transmission as described in *5.7 Date.*
x-tmrk-version	The API version to be used to evaluate the call as described in *5.8 Version.*

The following header fields are conditional:

Header Field	Description
Accept	An indicator in the call header as described in *5.9 Accept*.
Content-Length	Length of the body in bytes as described in *5.10 Content Length*.
Content-Range	Used in file upload calls as described in *5.11 Content Range*.
Content-Type	The application type of the call as described *5.12 Content Type*.
Location	Presented in most 201 Created responses headers as described in *5.13 Location*.
X-Guest-Password	Used to interact with VM operating system as described in *5.14 Password.*
X-Guest-User	Used to interact with VM operating system as described in *5.15 User.*
x-tmrk-contenthash	Advanced hash scheme digest of body as described in *5.16 Content Digest.*
x-tmrk-token	A session token for some calls as described in *5.17 Token*.

The following header fields are in the response header only:

Header Field	Description
x-tmrk-currentuser	The `href` to the user that executed the call as described in *5.18 Current User*.
x-tmrk-deprecated	An indicator in the response header as described in *5.19 Deprecated*.

Return to *5 Call Constructs*.

5.6 Authentication

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5.6.2 CloudApi Authentication 39
5.6.3 CloudApi Signature Generation 40
5.6.4 Examples 41

Advance to *5.7 Date*.

Every request made to the API must be authenticated. Two modes of authentication are supported: Basic and CloudApi. Both modes use either the standard `Authorization` header field or a custom `x-tmrk-authorization` header field. Some libraries have fixed usage for the Authorization header field; usage unalterable by the programmer. If both header fields are included in the request, then `x-tmrk-authorization` takes precedence. When

this document refers to the Authorization header field, either header field may be referenced. The following sections describe how to construct the headers needed for each authentication mode.

In constructing the Authorization, two transformations of the information may occur. One of the transformations converts the text to an 8-bit representation using UTF-8 as described in RFC 3629, *UTF-8, a Transformation Format of ISO 10646.* One of the transformations converts the text to Base64 representation as described in section 6.8 of RFC 2045, *Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies.*

Return to *5 Call Constructs*.

5.6.1 Basic Authentication

The Basic Authorization header field consists of the scheme name, `Basic`, and the Base64 text encoded value of username and password separated by a colon without any whitespace: {username}:{password}.

Note: The use of Basic authentication may be constrained by an organization. If one attempts basic authentication when not permitted by the organization, authentication fails. See *7.31.6 Action Administrative Organizations Edit Authentication Levels* for information on setting Basic authenticaton acceptability.

The format of the header field is:

```
Authorization: Basic {Base64 encoded username:password}
```

For example, the username of *username* and password of *password* will appear as:

```
Authorization: Basic dXNlcm5hbWU6cGFzc3dvcmQ=
```

Return to *5.6 Authentication*.

Return to *5 Call Constructs*.

5.6.2 CloudApi Authentication

The CloudApi `Authorization` header field consists of the scheme name, `CloudApi`, Access Key value, Signature Type, and the Signature itself.

Note: The acceptable hash algorithms, the Signature Type, may be constrained by an organization. If one uses a hash algorithm not permitted by the organization, authentication fails. See *7.31.6 Action Administrative Organizations Edit Authentication Levels* for information on setting acceptable hash algorithms.

The `Date` header field is required for CloudApi authentication. The `x-tmrk-contenthash` field is required for all messages with a request body as described in *5.16 Content Digest*.

```
Authorization: CloudApi AccessKey="{accessKey}" SignatureType="{signatureType}"
  Signature="{signature}"
Date: {currentUtcDateTime}
```

- {accessKey} is the user's API Key ID, the public identifier to their Secret Key.

- {signatureType} is the hash algorithm used to generate the signature. Valid values are `HmacSha1`, `HmacSha256`, or `HmacSha512`.
- {signature} is the content signature as described in *5.6.3 CloudApi Signature Generation*.
- {currentUtcDateTime} must be within a certain, configurable range of current server time. Currently a request must be within 5 minutes. This guards against certain security attacks, including replay attacks. When this check fails, the server returns response code `403 FORBIDDEN`.

Return to *5.6 Authentication*.

Return to *5 Call Constructs*.

5.6.3 CloudApi Signature Generation

The signature is based upon a Hash-based Message Authentication Code (HMAC) constructed from the request and computed using the HMAC-SHA1, HMAC-SHA256 or HMAC-SHA512 algorithm (as declared by `signatureType`), and then encoded using Base64 encoding. It can be mathematically represented as:

```
Signature = Base64([ HMAC-SHA1 | HMAC-SHA256 | HMAC-SHA512 ](UTF-8(StringToSign)))

StringToSign = {VERB} "\n"
               {Content-Length} "\n"
               {Content-Type} "\n"
               {Date} "\n"
               {CanonicalizedHeaders}
               {CanonicalizedResource}
```

5.6.3.1 Constructing the String to Sign

Construct the StringToSign of the signature string as follows:

- The `VERB` of the string is the HTTP request method, such as GET, POST, DELETE, or PUT, and must be uppercase.
- The values of all standard HTTP header fields must be included in the string in the order shown in the signature format, without the header field names. These header fields may be empty if they are not specified as part of the request; in which case only the new line character is required.
- All newline characters (`"\n"` above, the single LF character, hexadecimal 0x0A or decimal 10) shown are required within the signature string.
- Note that it is acceptable to specify both `x-tmrk-authorization` and `Authorization`; in this case, the service uses the value of `x-tmrk-authorization`.

5.6.3.2 Constructing the Canonicalized Headers String

Construct the CanonicalizedHeaders of the signature string as follows:

- Retrieve all header fields for the resource that begin with `x-tmrk-` excluding the `x-tmrk-authorization` header field, if present.
- Convert each HTTP header field name to lowercase.

- Sort the header fields lexicographically by header field name, in ascending order. Note that each header may appear only once in the string.
- Unfold the string by replacing any breaking whitespace with a single space.
- Trim any whitespace around the colon in the header field.
- Finally, append a newline character to each canonicalized header field in the resulting list.
- Concatenating all headers in this list into a single string as the CanonicalizedHeaders string.

5.6.3.3 Constructing the Canonicalized Resource String

Construct the CanonicalizedResource of the signature string as follows:

- Use the decoded URL for the resource, converted to all lower-case, as the source for the CanonicalizedResource.
- Append the resource's URI path, that portion of the call after the Terremark URI and before any query parameters (query parameters of a URI is that part of the URI after the question mark, "?"), followed by a newline character.
- Retrieve all query parameters (query parameters are separated by the ampersand character, "&") on the resource URL.
- Convert all parameter names to lowercase.
- Sort the query parameters lexicographically by parameter name, in ascending order.
- Append each query parameter name and value to the string, in order, in the following format, making sure to include the colon (:) between the name and the value, followed by a newline character after each name-value pair:

```
parameter-name:parameter-value\n
```

Return to *5.6 Authentication*.

Return to *5 Call Constructs*.

5.6.4 Examples

The following examples demonstrate the construction of the header.

5.6.4.1 GET Request with no query string

```
GET /organizations/1
Authorization: CloudApi AccessKey="accessKey" SignatureType="HmacSha256" Signature="{signature}"
x-tmrk-version: 2011-03-11
Date: Tue, 03 May 2011 11:00:00 GMT
```

Definitions:

```
{signature} = Base64(HMAC-SHA256(UTF8(StringToSign)))
StringToSign = GET\n
               \n
               \n
```

```
                Tue, 03 May 2011 11:00:00 GMT\n
                CanonicalizedHeaders
                CanonicalizedResource
```

```
CanonicalizedHeaders = x-tmrk-version:2011-03-11\n
```

```
CanonicalizedResource = /organizations/1\n
```

5.6.4.2 GET Request with query string and custom authorization header

```
GET /environments/1/tasks?sortBy=userName
```

```
x-tmrk-authorization: CloudApi AccessKey="accessKey" SignatureType="HmacSha1" Signature="{signature}"
```

```
x-tmrk-version: 2011-03-11
```

```
Date: Tue, 03 May 2011 11:00:00 GMT
```

Definitions:

```
{signature} = Base64(HMAC-SHA1(UTF8(StringToSign)))
```

```
StringToSign =  GET\n
                \n
                \n
                Tue, 03 May 2011 11:00:00 GMT\n
                CanonicalizedHeaders
                CanonicalizedResource
```

```
CanonicalizedHeaders = x-tmrk-version:2011-03-11\n
```

```
CanonicalizedResource = /environments/1/tasks\nsortby:userName\n
```

5.6.4.3 POST Request

```
POST /environments/1/createVirtualMachine
```

```
Content-Length: 1000
```

```
Content-Type: application/vnd.tmrk.cloudapi.createVirtualMachine
```

```
Authorization: CloudApi AccessKey="accessKey" SignatureType="HmacSha1" Signature="{signature}"
```

```
x-tmrk-contenthash: Sha256 wgh1ru91vayY2BJw4LVyMHflsJGYFylg7Hw3pGDBets=
```

```
x-tmrk-version: 2011-03-11
```

```
Date: Tue, 03 May 2011 11:00:00 GMT
```

Definitions:

```
Signature = Base64(HMAC-SHA1 (UTF8(StringToSign)))
```

```
StringToSign =  POST\n
                1000\n
                application/vnd.tmrk.cloudapi.createVirtualMachine\n
                Tue, 03 May 2011 11:00:00 GMT\n
                CanonicalizedHeaders
                CanonicalizedResource
```

```
CanonicalizedHeaders = x-tmrk-contenthash:Sha256
  wgh1ru91vayY2BJw4LVyMHflsJGYFylg7Hw3pGDBets=\nx-tmrk-version:2011-03-11\n
```

```
CanonicalizedResource = /environments/1/createVirtualMachine\n
```

Return to *5.6 Authentication*.

Return to *5 Call Constructs*.

5.7 Date

Requests, which are delayed for an extended period after transmission, are rejected in CloudApi authentication. The API inspects the standard `Date` header field or a custom `x-tmrk-date` header field. Some libraries have fixed usage for the Date header field; usage unalterable by the programmer. If the library values the `Date`, it will be used as the Canonicalized Headers String is built and the `x-tmrk-date` included in the Canonicalized Headers String as described in *5.6.3.2 Constructing the Canonicalized Headers String*. If both header fields are included in the request, then `x-tmrk-date` takes precedence in evaluating the timestamp for security.

Note: The permitted delay is configured at the server. At the time of this document, the delay limit is five minutes.

Dates and times in the HTTP header are expressed as defined in RFC 822, *Standard for the Format of ARPA Internet Text Message*, and updated by RFC 1123, *Requirements for Internet Hosts -- Application and Support* extended date and time format. All times are in GMT time, not local time.

```
<3 character day> ",␣" <two digit day> "␣" <3 character month> "␣" <four digit year> "␣" <two digit
 hour> ":" <two digit minute> ":" <two digit second> “GMT”
```

An example of properly formatted time is:

```
Date: Thu, 05 May 2011 22:22:35 GMT
```

The date-time stamp of a request may not differ too far from the current time on the server. Use the **Get Time** call to retrieve the current time of the server and synchronize the time.

Note: The date header is not required for Basic authentication.

Return to *5 Call Constructs*.

5.8 Version

The version of the API is different from, and in a different format than, the software release with which it may be associated. Instead of the common `{major release number}.{minor release number}` used in the software release, the version number of the API is the date on which the version is released for use. The format of the version header field, `x-tmrk-version`, conforms to the ISO8601 extended date format:

```
<four digit year> "-" <two digit month> "-" <two digit day>
```

An example of the format of the returned versions is:

```
2011-07-01
```

Use the call **Get Versions** to retrieve active versions.

Return to *5 Call Constructs*.

5.9 Accept

The Accept header field may be set in the call header to declare the preferred response Content-Type. Permitted values are `application/xml` and `application/json`.

If not used, responses are always of type `application/xml`. All responses in this document are presented as if the Accept header field had been set to `application/xml`.

Return to *5 Call Constructs*.

5.10 Content Length

Every call that may have a body, those calls with a method of PUT or POST, has a `Content-Length` header field, which is the length of the body in bytes. For any PUT or POST for which no body is required, the `Content-Length` header field must be set to zero, for example `Content-Length`: 0.

5.11 Content Range

The Content-Range header field is required in calls that upload files to the Enterprise Cloud, either a virtual machine with **Action Virtual Machines Guest File** or a catalog with **Action Catalog File**. It is set in the call header to declare the range of bytes in the chunk uploaded in the request body. The offsets are zero-based and indicate the first and last byte in the chunk out of the total bytes in the file. The header field value is defined as:

```
bytes {starting offset}-{ending offset}/{total file size}
```

For example:

```
bytes 0-9999/1680968746
```

Return to *5 Call Constructs*.

5.12 Content Type

5.12.1 Subtype for Sent Messages 45

5.12.2 Subtype for Return Messages.....45

Advance to *5.7 Date*.

Every call with a body has a `Content-Type` header field, which is an Internet Media Type. It is defined as:

```
<type> "/" <subtype> [";" <parameter> ]
```

The type used for Enterprise Cloud API is always `application`. The subtype varies by context.

Return to *5 Call Constructs*.

5.12.1 Subtype for Sent Messages

For all calls sent, with the exceptions described below, the subtype is `xml` or, if preferred, json. The Content-Type is, therefore, `application/xml` or `application/json`.

For the call **Action Virtual Machines Guest File** and **Action Catalog File** the subtype is `octet-stream`. The Content-Type is, therefore, `application/octet-stream`.

Return to *5.12 Content Type*.

Return to *5 Call Constructs*.

5.12.2 Subtype for Return Messages

For return messages, the subtype is a URN, which is the Terremark base URN appended by the relative URN of the call. The Terremark base URN is:

```
vnd.tmrk.cloud
```

As an example, the relative URN for the Create User call is:

```
admin.inviteUser
```

The complete subtype for the Create User call is:

```
vnd.tmrk.cloud.admin.inviteUser
```

The complete Content-Type for the Create User response is:

```
application/vnd.tmrk.cloud.admin.inviteUser
```

The optional parameter is defined as:

```
<name> "=" <value>
```

The API uses the optional parameter to denote a Content-Type that is a collection of entities. The optional parameter, when used, is separated from the subtype by a semicolon and will be:

```
type=collection
```

For example the Content-Type of Get Catalog Log is:

```
application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection
```

Return to *5.12 Content Type*.

Return to *5 Call Constructs*.

5.13 Location

The Location header field is set in the response header of most responses with an HTTP response code of 201 Created. Exceptions include entities in which an object is not created in the environment or administrative entities;

for example, when creating monitors or assigning an address to the firewall logs. The value of the Location header fields will be the same as the `href` of the entity created, that is, the `href` on the root element of the response.

Return to *5 Call Constructs*.

5.14 Password

The API supports some direct interactions with the guest operating system on the virtual machine as described in the calls beginning with Action Virtual Machine Guest …. To permit interactions with the operating system, guest credentials must be supplied. The password header field, `X-Guest-Password`, is used to provide the password to the operating system of the guest user.

Return to *5 Call Constructs*.

5.15 User

The API supports some direct interactions with the guest operating system of the virtual machine as described in the calls beginning with Action Virtual Machine Guest …. To permit interactions with the operating system, guest credentials must be supplied. The user header field, `X-Guest-User`, is used to provide the username to the operating system of the guest user.

Return to *5 Call Constructs*.

5.16 Content Digest

The content digest header field, `x-tmrk-contenthash`, is optional with CloudApi and Basic authentication. It is usable only with requests containing a body. The API service does not use the content hash header field on responses. When used, it contains a digest of the request body. The content digest header field is included in the HMAC calculation to ensure the integrity of the request body. Users requiring greater security may use one of the supported hash schemes to create a message digest of the request body. The server will use the same hash scheme to verify that the request body is unaltered. Supported hash schemes are SHA-1, SHA-256, and SHA-512.

The digest is placed in the `x-tmrk-contenthash` header field immediately following a string identifying the scheme used. Valid values for the scheme are `Sha1`, `Sha256`, or `Sha512`.

```
x-tmrk-contenthash: {scheme} {hash-digest}
```

For example:

```
x-tmrk-contenthash: Sha256 zyUzT32tGw0HmmHK48LJKa74y2mykeBUaLF+mOcLKcU=
```

Return to *5 Call Constructs*.

5.17 Token

Some calls, such as uploading catalog entries, have a need to establish a session. Each authenticated call returns a session token, `x-tmrk-token`, in the header. This token should be returned in subsequent call headers.

The session token expires after an extended delay. The next authenticated call returns a fresh token. The new token must be used for subsequent calls.

Note: The permitted session expiration delay is configured at the server. At the time of this document, the expiration delay limit is ten minutes.

Return to *5 Call Constructs*.

5.18 Current User

The current user header field, `x-tmrk-currentuser`, is used only in API service responses. The API request does not use this header field. This header field is set to the `href` of the user that executed the call that returned the response.

Some calls may only be executed against one's own account, such as changing user credentials. Other calls may never be executed against one's own account, such as deleting a user. However, it is not always clear from the authorization credentials used in the API who the user is in the system. By returning the `href` to the user executing each call, such calls may be executed appropriately.

Return to *5 Call Constructs*.

5.19 Deprecated

The deprecated header field, `x-tmrk-deprecated`, is conditional and used only in API service responses. The API request does not use this header field. When requests are made in versions that have become deprecated, the response header will contain this header field.

Versions of the API are not supported indefinitely. Policy at the time of this document is to support the current version and two prior versions of the API. In advance of the release of new versions of the API, the version to be displaced will be marked as deprecated. Responses to all requests created in a deprecated version have the `x-tmrk-deprecated` header field set to true. Responses to versions not deprecated generally will not have this header field.

```
x-tmrk-deprecated: {true | false}
```

For example:

```
x-tmrk-deprecated: true
```

The <Deprecated> element as described in *7.1.2 Get Versions* is also set to true on deprecated versions.

Return to *5 Call Constructs*.

5.20 Dates and Times in Calls

Dates and times in URL query parts, request bodies, and responses are expressed in ISO8601 extended date and time format. All times are expressed in UTC time or Zulu time, not local time.

```
<four digit year> "-" <two digit month> "-" <two digit day> "T" <two digit hour> ":" <two digit
 minute> ":" <two digit second> "Z"
```

An example of properly formatted time is:

```
2011-05-12T14:49:10Z
```

Return to *5 Call Constructs*.

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Advance to *7 Application Programming Interface Reference Guide*.

This Programmer's Guide is a reference to performing tasks using the Enterprise Cloud Application Programming Interface. The API offers more than one way to retrieve most entities. This affords several paths through the API to accomplish most tasks. Each procedure in this section uses one suggested path to accomplish the task. The skilled reader will recognize other paths.

The reader will note that the procedures always use the `name` or `type` to select an entity; then use the `href` as a reference or as the URL for the call. While the `href` content is described in *7 Application Programming Interface Reference Guide*, the content is subject to change at any time and should be considered opaque.

Note: For any step in the procedures below in which a <Link> is selected, the selection is based on the `type` attribute. For convenience, the Terremark base URN, `vnd.tmrk.cloud`, is not included as it is common to all `type` definitions.

Note: For any step in the procedures below in which an <Action> is selected, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action will fail. The attribute will be set to `noAccess` if the user does not have permission to perform the action. The attribute will be set to `disabled` if business rules prohibit the action, such as enabling a feature already enabled.

The procedures are presented as a numbered ordered list where each step represents a single API call. As a result of that call an action is, or multiple actions are, taken. Some calls require complex actions. The conventions below describe how each step is presented.

A bulleted list indicates multiple steps for a single action, ***the action highlighted in the example below***.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. ***Use the href to retrieve that environment in step 3***.

A bulleted list also indicates multiple choices from which only a single action may be taken, ***the action highlighted in the example below***.

1. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. ***Use the value of the name attribute in the <Tag> of the body to create the appropriate body in step 5***.
    - To create a new tag in the organization, ***use a new value in the <Tag> of the body to create the appropriate body in step 5***.

A lettered ordered list indicates multiple actions, ***the actions highlighted in the example below***, for a single call.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    a. Select the <VirtualMachine> for the desired virtual machine. ***Use the href to retrieve that virtual machine in step 7***.
    b. Select the <Link> with the `type` of `deviceLayout`. ***Use the href to retrieve the layout of the environment in step 8***.

A procedure may combine both with multiple actions, ***the actions highlighted in the example below***, one or more of which require multiple steps.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. ***Use the href to retrieve that environment in step 2***.

   b.
      - Under the <Location> in which the desired environment is located,
      - Select the <Catalog> for that location. ***Use the href to retrieve the catalog for the desired environment in step 4***.

   c. Select the <Link> with the `type` of `deviceTag`. ***Use the href to retrieve the tags of the organization in step 8***.

6.1 Common High Level Use Cases

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Advance to *6.2 Preparation*.

In this section, we present high level use cases commonly performed by Enterprise Cloud organizations. In each use case, a description of the use case is followed by a presentation, in order, of the procedures from later sections in the Programmer's Guide necessary to complete the use case.

6.1.1 Create a Web Server and Expose It Publicly

One of the most common uses of the Enterprise Cloud is for organizations to create a Web server or Web-based applications and expose it to traffic from the public Internet.

1. Create a virtual machine using one of the procedures below. When creating the virtual machine, the network chosen for the virtual machine must be a network in the demilitarized zone.
    - To create from a template, use *6.5.3 Create a Server from a Template*.
    - To copy an existing virtual machine, use *6.5.5 Create a Server by Customizable* Copy.
    - To import a virtual machine for the catalog, use *6.5.4 Create a Server from a Catalog Item*.
2. Create an Internet service to listen for the protocol on the port for the application. Use *6.10.1 Create an Internet Service*.
3. Create a node service to bind the new virtual machine to the Internet service. Use *6.11.1 Create a Node Service on an Internet Service*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.2 Create an Application Server or Database Server with Access Restricted to Specific Web Servers

Often a Web-based application must make reference to private information for which exposure to the public Internet is undesirable. That information is made available on an application server or database server behind the firewall on the internal network. The firewall must be informed to permit traffic between each Web server providing the Web-based application and the application server or database server while excluding all other traffic.

1. Create a virtual machine using one of the procedures below. When creating the virtual machine, the network chosen for the virtual machine must be a network on the internal side of the firewall.
    - To create from a template, use *6.5.3 Create a Server from a Template*.
    - To copy an existing virtual machine, use *6.5.5 Create a Server by Customizable* Copy.
    - To import a virtual machine for the catalog, use *6.5.4 Create a Server from a Catalog Item*.
2. Create a firewall rule to permit traffic from each Web server, which provides the Web-based application from the DMZ, to the new virtual machine. Use *6.12.2 Create a Custom Firewall Rule*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.3 Create a Linux Virtual Machine That Can Only Be Accessed Using an SSH Key

For security, virtual machines with a Linux operating system created from a template provide initial access to the guest operating system only through secure shell, which requires a key as the user credential. The SSH key is injected into the guest operating system when the virtual machine is created. The SSH key may be an existing key or a new key may be created.

1. Obtain the `href` to the desired SSH key, which must be supplied to the virtual machine when creating a Linux virtual machine. Use one of the procedures below.
    - To provide an existing SSH key, use *6.18.1 Retrieve All SSH Keys for an Organization* to retrieve the available SSH keys.
    - To provide a new SSH key, use *6.18.3 Create a New SSH Key* to create a new SSH key.
2. Create a virtual machine from a Linux template; supply the SSH key from step 1. Use *6.5.3 Create a Server from a Template*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.4 Open a DMZ network to an INT network or vice versa

Occasionally it is necessary for the virtual machines on an internal network, which is a network behind the firewall, to have unrestricted access to the virtual machines in the DMZ or the reverse. The firewall must be informed to permit traffic such traffic. When defining the rule, directionality is important, that is, the rule permits traffic to originate from the source network to the destination network but not the reverse.

1. Create a firewall rule to permit traffic from the source network to the destination network. Use *6.12.2 Create a Custom Firewall Rule*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.5 Increase your Compute Resources without Buying More

The Enterprise Cloud's Dynamic Capacity Management feature allows you to automatically deal with unforeseen spikes in usage by enabling "burst mode" access to a pool of additional resources, available on a metered basis. Burst mode is available for both processor and memory resources. Bursting is not available to trial customers.

The ability to burst must be set for each compute pool by the account manager for the organization. Once the ability to burst is set for a compute pool, bursting may be enabled or disabled at any time. Enabling burst mode does not, itself, incur additional expense. However, use of the additional capacity does. Therefore, burst mode is typically enabled only when business conditions warrant its use.

1.
    - To enable processor burst mode, use *6.3.3 Enable Processor Burst Mode*.
    - To enable memory burst mode, use *6.3.4 Enable Memory Burst Mode*.
    - To disable processor burst mode, use *6.3.5 Disable Processor Burst Mode*.
    - To disable memory burst mode, use *6.3.6 Disable Memory Burst Mode*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.6 Restrict Access to my Virtual IP Address

Often a Web-based application is designed for a limited audience. Exposure to the entire public Internet is not desirable. With trusted network groups, access to an Internet service may be restricted to a limited subset of all Internet addresses. A trusted network group may be one or more individual hosts, one or more networks, or a combination of both hosts and networks.

1. If the Trusted Network Group has not been created, use *6.13.2 Create a Trusted Network Group* to create the Trusted Network Group
2. Add the Trusted Network Group as the only source to the Internet service, use *6.10.2 Edit an Internet Service*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.7 Configure Sorry Pages or Redirect Users to an Offline Service Using Backup Virtual IP Addresses

Web-based applications are not immune to difficulties and when difficulties arise, two responses are available within Enterprise Cloud. For HTTP services, a redirect URL may be assigned to the Internet service. Should the service become unavailable, the load balancer passes the redirect URL to the client where a "sorry page," or any other solution, can be presented to the browser. For all services, a backup Internet service may be defined and assigned to the Internet service. Should the main Internet service become unavailable, the load balancer automatically substitutes the backup Internet service. When the Internet service becomes available again, the load balancer restores the Internet service to the application and returns the backup Internet service to backup status.

1. If the Internet service uses HTTP as the protocol, add a redirect URL to the Internet service; use *6.10.2 Edit an Internet Service*.
2. For all protocols, a backup Internet service may be created.
    - Create the backup Internet service; use *6.10.4 Create a Backup Internet Service*.
    - Add one or more node services to the backup Internet service; use *6.11.2 Create a Node Service on a Backup Internet Service*.
3. Add the backup Internet service to the Internet service; use *6.10.2 Edit an Internet Service*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.8 Create a Path for Outbound Traffic Originating from an Application

Not every cloud application originates outbound traffic, as opposed to more typical replies to inbound traffic. For applications that do, the Enterprise Cloud has a default network Reverse Network Address Translation (RNAT) assigned to the first public IP created for the environment. That means that for every environment, should an organization's application originate outbound traffic, that traffic is sent to the default network RNAT and on to the public Internet.

Sometimes, an application may originate higher volumes of outbound traffic and could impact the bandwidth on the first public IP address. The organization may activate a new public IP address, opening a new avenue for bandwidth. The network on which the chatty application resides may then have its network RNAT assigned to the new public IP address, thus relieving the first public IP address of the additional traffic. Alternatively, just the host, or hosts, on which the chatty application resides may have device RNATs assigned to the new public IP address. A device RNAT narrowly targets just that device with high outbound traffic and assigns their traffic to the new public IP address.

1. Activate a new public IP address; use *6.8.1 Activate a Public IP*.
2. Create a reverse network address translation:
    - If the entire DMZ network is to be associated with the new public IP address, use *6.9.1 Edit a Network RNAT Association*.
    - If only a specific network host, or hosts, is to be associated with the new public IP address, use *6.9.2 Create a Device RNAT Association*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.9 Alter Load Balancer Default Monitoring Behavior Using Loopback Monitoring

The load balancers always monitor the Internet services. Available monitors are:

- ECV – Extended Content Verification, an HTTP GET is sent and the response scanned for specific content.
- HTTP – an HTTP HEAD is sent and specific HTTP response codes expected.
- Ping – an ICMP echo request is sent and an echo reply expected.
- Default – a TCPSYN message is sent and a SYN-ACK expected.

The default monitor is a relatively lightweight monitor with regards to resource usage. However, sometimes that may be more than desired. The Enterprise Cloud also supports a loopback monitor. A loopback monitor periodically probes its loopback address with an ICMP echo request and expects an echo reply. This monitor does not probe the servers on the Internet service and therefore does not ensure the availability of the service. Resource consumption, however, is minimized.

1. Create a loopback monitor on the Internet service. Use *6.10.11 Create a Loopback Monitor*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.10 Organize Your Virtual Machines by Creating Rows and Groups and Moving Them

As organizations grow their commitment to the cloud, the number of servers may make the logical structure of their environment difficult to remember. Organizations may organize their devices (both physical and virtual) into rows and groups so the environment can be surveyed easily visually and logically. Rows and groups help to logically

view similar servers together. Each environment has one or more rows. Each row has one or more groups. Each group has one or more devices. Rows and groups have no physical representation; the organization defines what each row and group represents. Rows and groups may be moved around on the layout view and devices may be moved between groups.

1. Create a row:
    - On an environment layout, use *6.4.4 Create a New Row on an Environment Layout*.
    - On a compute pool layout, use *6.4.5 Create a New Row on a Compute Pool Layout*.
2. Create a group:
    - On an environment layout, use *6.4.6 Create a New Group on an Environment Layout.*
    - On a compute pool layout, use *6.4.7 Create a New Group on a Compute Pool Layout*.

    Note: A new row may also be created when creating a group.
3. Move a row:
    - Up on an environment layout, use *6.4.10 Move a Row Up on an Environment Layout*.
    - Up on a compute pool layout, use *6.4.11 Move a Row Up on a Compute Pool Layout*.
    - Down on an environment layout, use *6.4.12 Move a Row Down on an Environment Layout.*
    - Down on a compute pool layout, use *6.4.13 Move a Row Down on a Compute Pool Layout*.
4. Move a group:
    - Left, and up if at the beginning of a row, on an environment layout, use *6.4.16 Order a Group Higher on an Environment Layout*.
    - Left, and up if at the beginning of a row, on a compute pool layout, use *6.4.17 Order a Group Higher on a Compute Pool Layout*.
    - Right, and down if at the end of a row, on an environment layout, use *6.4.18 Order a Group Lower on an Environment Layout.*
    - Right, and down if at the end of a row, on a compute pool layout, use *6.4.19 Order a Group Lower on a Compute Pool Layout*.
5. Move a virtual machine:
    - On an environment layout, use *6.4.20 Move a Virtual Machine on an Environment Layout*.
    - On a compute pool layout, use *6.4.21 Move a Virtual Machine on a Compute Pool Layout*.
6. Move a physical device on an environment layout:
    - A physical server, use *6.4.22 Move a Physical Server on an Environment Layout*.
    - A physical router, use *6.4.23 Move a Physical Router on an Environment Layout*.
    - A high availability router, use *6.4.24 Move a High Availability Router on an Environment Layout*.
    - A storage device, use *6.4.25 Move a Storage Device on an Environment Layout*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.1.11 Migrate a Virtual Machine from Anywhere into Enterprise Cloud

Organizations may move their workloads from external environments into Enterprise Cloud. Perhaps the organization has a server currently defined internally that they wish to migrate to Enterprise Cloud or perhaps they wish to build the service in a controlled environment before deploying. When the virtual machine is ready, the organization uploads the virtual machine files to a catalog item within their catalog. They may then import that catalog item into their environment repeatedly from their catalog. When a catalog item is no longer needed, the organization may remove the catalog item to free storage space for new catalog items.

An Open Virtualization Format (OVF) file describes the virtual machine: required virtual disks and required virtual hardware configuration, including CPU, memory, networking, and storage. The Virtual Machine DisK (VMDK) is a file that encodes a single virtual disk from a single virtual machine. The OVF file and all the described VMDK files form the virtual machine and the VM Upload catalog item. To create an OVF file, see: Creating OVF Packages.

1. Add the virtual machine to the catalog; use *6.19.6 Add a Catalog Item to an Organization*.
2. Import the virtual machine into a compute pool; use *6.5.4 Create a Server from a Catalog Item*.

Return to *6.1 Common High Level Use Cases*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.2 Preparation

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6.2.2 Enter the Application Programming Interface 58

Advance to *6.3 Resources*.

The authentication model requires a date and version. Appropriate values may be obtained anonymously.

Return to *6 Application Programming Interface Programmer's Guide*.

6.2.1 Validate Required Header Field Values

The first task is to validate two required header fields. As described in *5.5 Header*, the header of every call, other than the two in this procedure, must carry the time and version.

The time must be near that of the service and is configurable. Currently, the request time must be neither earlier than 5 minutes before server time nor later than 5 minutes after server time or a 403 FORBIDDEN response is returned. Users of the API should request current server time using the **Get Time** call, calculate the time difference between the local computer clock and the Enterprise Cloud clock, and adjust the time stamp in all messages in the session accordingly.

Inactive versions will not be accepted. Deprecated versions will be accepted for a limited time to permit migrating to an active version. Use of an invalid version, including retired versions, will result in a 403 FORBIDDEN response.

1. **Get Time**: Retrieve the server time. This call is made anonymously.

   Inspect server time and, if necessary, adjust the time by the difference before use in the Date header field in calls.

2. **Get Versions**: Retrieve active versions. This call is made anonymously.

   If the version used has become deprecated, notification should be issued to the responsible party to prepare to migrate to a newer version. Additionally, when a version becomes deprecated the `x-tmrk-deprecated` header field is set to `true` in each response to calls made in a deprecated version.

Return to *6.2 Preparation*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.2.2 Enter the Application Programming Interface

The **Get Organizations** call is the entry point for the API. The call returns links and references, directly or indirectly, to all other branches of the API.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under <Organization> for the desired organization may be found links and actions to the entire API.

Return to *6.2 Preparation*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.3 Resources

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Advance to *6.4 Layout*.

Resources provide access to information regarding resource utilization and to control burst mode.

Return to *6 Application Programming Interface Programmer's Guide*.

6.3.1 Retrieve Summary Utilization for an Environment

A quick overview of resource utilization may be obtained for compute pools in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `computePoolResourceSummary; type=collection`. Use the `href` to retrieve the resource summary in step 3.
3. **Get Resources Summary List**: Retrieve summary information regarding resource utilization in all the compute pools in the environment.

Return to *6.3 Resources*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.3.2 Retrieve Summary Utilization for a Compute Pool

A quick overview of resource utilization may be obtained for a compute pool.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `computePoolResourceSummary`. Use the `href` to retrieve the resource summary in step 4.
4. **Get Resources Summary**: Retrieve summary information regarding resource utilization in the compute pool.

Return to *6.3 Resources*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.3.3 Enable Processor Burst Mode

Burst mode permits a compute pool to temporarily exceed its subscribed processor level. Enabling burst mode does not, itself, incur additional expense. However, use of the additional capacity does. Therefore, processor burst mode is often only enabled when business conditions warrant its use.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if CPU burst is already enabled or if the organization has not subscribed to bursting.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    - Under <CpuBurst>,
    - Select the <Action> with a `name` of `enableCpuBurst`. Use the `href` to enable processor burst mode in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Resources Enable Burst Processor**: Enable processor burst mode in the compute pool.

   Select the <Task> in the response with an <Operation> value of `Enable Processor Burst`. Use the `href` to poll the task in step 5.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.4 Enable Memory Burst Mode

Burst mode permits a compute pool to temporarily exceed its subscribed memory level. Enabling burst mode does not, itself, incur additional expense. However, use of the additional capacity does. Therefore, memory burst mode is often only enabled when business conditions warrant its use.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if memory burst is already enabled or if the organization has not subscribed to bursting.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   - Under <MemoryBurst>,
   - Select the <Action> with a `name` of `enableMemoryBurst`. Use the `href` to enable processor burst mode in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Resources Enable Burst Memory**: Enable memory burst mode in the compute pool.

   Select the <Task> in the response with an <Operation> value of `Enable Memory Burst`. Use the `href` to poll the task in step 5.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.3 Resources*.

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6.3.5 Disable Processor Burst Mode

Burst mode permits a compute pool to temporarily exceed its subscribed processor level. Enabling burst mode does not, itself, incur additional expense. However, use of the additional capacity does. Therefore, processor burst mode is often disabled when business conditions do not warrant its use.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if CPU burst is already disabled or if the organization has not subscribed to bursting.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
   - Under <CpuBurst>,
   - Select the <Action> with a `name` of `disableCpuBurst`. Use the `href` to disable processor burst mode in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Resources Disable Burst Processor**: Disable processor burst mode in the compute pool.

   Select the <Task> in the response with an <Operation> value of `Disable Processor Burst`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.3 Resources*.

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6.3.6 Disable Memory Burst Mode

Burst mode permits a compute pool to temporarily exceed its subscribed memory level. Enabling burst mode does not, itself, incur additional expense. However, use of the additional capacity does. Therefore, memory burst mode is often disabled when business conditions do not warrant its use.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if memory burst is already disabled or if the organization has not subscribed to bursting.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    - Under <MemoryBurst>,
    - Select the <Action> with a `name` of `disableMemoryBurst`. Use the `href` to disable processor burst mode in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Resources Disable Burst Memory**: Disable memory burst mode in the compute pool.

    Select the <Task> in the response with an <Operation> value of `Disable Memory Burst`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.7 Retrieve Storage Usage Detail

Retrieve storage usage detail for active virtual machines and detached disks in a compute pool. Response includes storage usage of every active virtual machine and a list of all available detached disks.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `computePoolStorageUsageDetail`. Use the `href` to retrieve the storage usage in step 4.
4. **Get Resources Usage Storage**: Retrieve storage usage in the compute pool.

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6.3.8 Retrieve Detached Disks

Retrieve detached disks in a compute pool.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.
4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

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6.3.9 Rename a Detached Disk

A detached disk in a compute pool may be renamed or the description changed.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if a task is queued or running against the detached disk: another rename, detach, attach, or remove operation is in progress or the detached disk is in a retry state.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.

4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

   - Under <DetachedDisk> where the `name` is that of the the desired detached disk,
   - Select the <Link> with the `name` of `edit`. Use the `href` to modify the detached disk in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Detached Disks Edit**: Create the appropriate body for the call and submit to modify the detached disk in the compute pool.

   Select the <Task> in the response with an <Operation> value of `Rename Detached Virtual Disk`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.10 Delete a Detached Disk

A detached disk may be removed from a compute pool.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if a task is queued or running against the detached disk: another rename, detach, attach, or remove operation is in progress or the detached disk is in a retry state.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.

4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

   - Under <DetachedDisk> where the `name` is that of the the desired detached disk,
   - Select the <Link> with the `name` of `remove`. Use the `href` to remove the detached disk in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Detached Disks Remove**: Create the appropriate body for the call and submit to remove the detached disk from the compute pool.

   Select the <Task> in the response with an <Operation> value of `Rename Detached Virtual Disk`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.11 Retrieve Tasks for a Detached Disk

Retrieve the tasks for a specified detached disk. Tasks present a history of changes to the detached disk and are retained for a year.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.
4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

   Select <Tasks>. Use the `href` to retrieve tasks for the specified detached disk in step 5.
5. **Get Tasks by Detached Disk**: Retrieve the tasks for the specified detached disk.

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6.3.12 Retry a Failed Detach Disk Operation

Occasionally, a detach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.
4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

    Select the <DetachedDisk> where the value of <Status> is `DetachInProgress` and the first <Task> has a value for <Operation> of `Detach Virtual Disk` and a value for <Status> of `Error`. Use the `href` to retrieve the detached disk in step 5.
5. **Get Detached Disks by ID**: Retrieve the specified detached disk in the compute pool.

    Select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 6.
6. **Get Retry Operations Detach Disk by Detached Disk**: Retrieve the pending retry operation.

    Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 7.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
7. **Action Retry Operations Detach Disk by Detached Disk**: Retry the pending retry operation.

    Select the <Task> in the response with an <Operation> value of `Detach Virtual Disk`. Use the `href` to poll the task in step 8.
8. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.13 Retry a Failed Attach Disk Operation

Occasionally, an attach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to retrieve the detached disks in step 4.
4. **Get Detached Disks**: Retrieve detached disks in the compute pool.

    Select the <DetachedDisk> where the value of <Status> is `AttachInProgress` and the first <Task> has a value for <Operation> of `Attach Virtual Disk` and a value for <Status> of `Error`. Use the `href` to retrieve the detached disk in step 5.
5. **Get Detached Disks by ID**: Retrieve the specified detached disk in the compute pool.

    Select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 6.
6. **Get Retry Operations Attach Disk by Detached Disk**: Retrieve the pending retry operation.

    Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 7.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
7. **Action Retry Operations Attach Disk by Detached Disk**: Retry the pending retry operation.

    Select the <Task> in the response with an <Operation> value of `Attach Virtual Disk`. Use the `href` to poll the task in step 8.
8. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.3.14 Retrieve Processor Usage

Retrieve processor usage in a compute pool at five minute intervals for the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22 then the start time is 10:25 yesterday and the end time is 10:25 today.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `computePoolCpuUsage`. Use the `href` to retrieve the processor usage in step 4.
4. **Get Resources Usage Processor**: Retrieve processor usage in the compute pool.

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6.3.15 Retrieve Processor Usage Detail for an Interval

Retrieve processor usage in a compute pool for a specified five minute time interval within the 24 hours ending one hour prior to the current time, rounded later For example, if current time is 11:22 then the start time is 10:25 yesterday and the end time is 10:25 today. The response includes usage of every virtual machine during the interval.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `computePoolCpuUsage`. Use the `href` to retrieve the processor usage in step 4.
4. **Get Resources Usage Processor**: Retrieves processor usage in the compute pool.
    a. Select the <Time> with a time value closest to the desired time.
    b. Select the <Link> with the `type` of `computePoolCpuUsageDetail`. Use the `href` to retrieve the processor usage detail in step 5; replace {time} in the query part on the `href` with the selected <Time> from step 4a.
5. **Get Resources Usage Processor Detail**: Retrieve the processor usage for the desired time interval in the compute pool l.

Return to *6.3 Resources*.

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6.3.16 Retrieve Memory Usage

Retrieve memory usage in a compute pool at five minute intervals for the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22 then the start time is 10:25 yesterday and the end time is 10:25 today.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `computePoolMemoryUsage`. Use the `href` to retrieve the memory usage in step 4.
4. **Get Resources Usage Memory**: Retrieve memory usage in the compute pool.

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6.3.17 Retrieve Memory Usage Detail for an Interval

Retrieve memory usage in a compute pool for a specified five minute time interval within the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22 then the start time is 10:25 yesterday and the end time is 10:25 today. The response includes usage of every virtual machine during the interval.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `computePoolMemoryUsage`. Use the `href` to retrieve the memory usage in step 4.

4. **Get Resources Usage Memory**: Retrieves memory usage in the compute pool.

   a. Select the <Time> with a time value closest to the desired time.
   b. Select the <Link> with the `type` of `computePoolMemoryUsageDetail`. Use the `href` to retrieve the memory usage detail in step 5; replace {time} in the query part on the `href` with the selected <Time> from step 4a.

5. **Get Resources Usage Memory Detail**: Retrieve the memory usage for the desired time interval in the compute pool.

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6.3.18 Retrieve Daily Processor Performance Statistics

Retrieve processor performance statistics, processor usage by virtual machine in a compute pool, for the period requested aggregated across each day.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `performanceStatistics`. Use the `href` to retrieve the performance statistics in step 4.

4. **Get Resources Performance Statistics**: Retrieve information regarding performance statistics.

   - Under <Daily>,
   - Select <Cpu>. Use the `href` to retrieve the daily processor performance statistics in step 5. If a customer time period is needed, add the query part to the `href` with the desired start and end times.

5. **Get Resources Performance Statistics Processor Daily**: Retrieve the daily processor performance statistics for the desired time interval in the compute pool.

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6.3.19 Retrieve Hourly Processor Performance Statistics

Retrieve processor performance statistics, processor usage by virtual machine in a compute pool, for the period requested aggregated across each hour.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `performanceStatistics`. Use the `href` to retrieve the performance statistics in step 4.
4. **Get Resources Performance Statistics**: Retrieve information regarding performance statistics.
    - Under <Hourly>,
    - Select <Cpu>. Use the `href` to retrieve the hourly processor performance statistics in step 5. If a customer time period is needed, add the query part to the `href` with the desired start and end times.
5. **Get Resources Performance Statistics Processor Hourly**: Retrieve the hourly processor performance statistics for the desired time interval in the compute pool.

Return to *6.3 Resources*.

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6.3.20 Retrieve Daily Memory Performance Statistics

Retrieve memory performance statistics, memory usage by virtual machine in a compute pool, for the period requested aggregated across each day.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to call the desired compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `performanceStatistics`. Use the `href` to retrieve the performance statistics in step 4.

4. **Get Resources Performance Statistics**: Retrieve information regarding performance statistics.

   - Under <Daily>,
   - Select <Memory>. Use the `href` to retrieve the daily memory performance statistics in step 5. If a customer time period is needed, add the query part to the `href` with the desired start and end times.

5. **Get Resources Performance Statistics Memory Daily**: Retrieve the daily memory performance statistics for the desired time interval in the compute pool.

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6.3.21 Retrieve Hourly Memory Performance Statistics

Retrieve memory performance statistics, memory usage by virtual machine in a compute pool, for the period requested aggregated across each hour.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to call the desired compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `performanceStatistics`. Use the `href` to retrieve the performance statistics in step 4.

4. **Get Resources Performance Statistics**: Retrieve information regarding performance statistics.

   - Under <Daily>,
   - Select <Memory>. Use the `href` to retrieve the hourly memory performance statistics in step 5. If a customer time period is needed, add the query part to the `href` with the desired start and end times.

5. **Get Resources Performance Statistics Memory Hourly**: Retrieve the hourly memory performance statistics for the desired time interval in the compute pool.

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6.3.22 Retrieve Alert History

Retrieve the alerts in an organization. Alerts present a history of specific behaviors in an organization demanding attention. The procedure may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.

   Select the <Link> with a `type` of `alertLog`. Use the `href` to retrieve the tasks in step 2.

2. **Get Alerts Log**: Attach query parameters, if desired, and retrieve the alerts in the organization.

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6.3.23 Retrieve a Specified Alert

Retrieve a specified alert in an organization. Alerts present a history of specific behaviors in an organization demanding attention and this call retrieves a single desired alert.

1. **Get Organizations**: Retrieve information regarding the organization.

   Select the <Link> with a `type` of `alertLog`. Use the `href` to retrieve the tasks in step 2.

2. **Get Alerts Log**: Attach query parameters, if desired, and retrieve the alerts in the organization.

   Select the <Alert> for the desired alert. Use the `href` to retrieve the tasks in step 3.

3. **Get Alerts Log by ID**: Retrieve the specified alert in the organization.

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6.3.24 Retrieve the Readings for a Specified Alert

Retrieve the readings taken for or during a specified alert in an organization. Alerts present a history of specific behaviors, crossing a threshold, in an organization demanding attention. This procedure retrieves the readings for a desired alert. The procedure may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.

   Select the <Link> with a `type` of `alertLog`. Use the `href` to retrieve the tasks in step 2.

2. **Get Alerts Log**: Attach query parameters, if desired, and retrieve the alerts in the organization.

   - Under the <Alert> for the desired alert,
   - Select the <Link> with a `type` of `alertEvent; type=collection`. Use the `href` to retrieve the tasks in step 3.

3. **Get Alerts Log Events**: Attach query parameters, if desired, and retrieve the readings for a specified alert in the organization.

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6.3.25 Retrieve Task History

Retrieve the tasks in an environment. Tasks present a history of changes to the environment and are retained for a year. The call may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks in step 3.
3. **Get Tasks**: Attach query parameters, if desired, and retrieve the tasks in the environment.

Return to *6.3 Resources*.

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6.4 Layout

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Advance to *6.5 Devices: Virtual Machines*.

Layout is a logical aggregation of virtual machines and physical devices defined by the organization. Layout is an environment concept but visible from both the environment and the compute pool. From the environment, all rows, groups, virtual machines, and physical devices are visible. From the compute pool, only a subset is visible. To appear in a compute pool layout, virtual machines in the rows and groups must be allocated from the compute pool. As physical devices are not allocated from the compute pool, they do not appear on compute pool layouts.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.1 Rename a Compute Pool

Rename a compute pool. The name of a compute pool may be changed after it is created.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Action> with the `name` of `edit`. Use the `href` to retrieve the compute pool edit in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Compute Pools Edit**: Create the appropriate body for the call and submit to modify the compute pool.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.2 Retrieve the Environment Layout

Retrieve the layout for an environment. The environment layout includes both virtual machines and physical devices.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.3 Retrieve the Compute Pool Layout

Retrieve the layout for a compute pool. The compute pool layout includes only virtual machines.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool. In step 3
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for the compute pool.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.4 Create a New Row on an Environment Layout

Create a new row on an environment layout. A new row may be created on an environment layout or a compute pool layout; the new row is visible across the entire environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for that environment.

   Select the <Action> with the `name` of `createLayoutRow`. Use the `href` to create the new row in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Layout Rows Create**: Create the appropriate body for the call and submit to create the new row in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.5 Create a New Row on a Compute Pool Layout

Create a new row on a compute pool layout. A new row may be created on an environment layout or a compute pool layout; the new row is visible across the entire environment.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.

   Select the <Action> with the `name` of `createLayoutRow`. Use the `href` to create the new row in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Layout Rows Create**: Create the appropriate body for the call and submit to create the new row in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.6 Create a New Group on an Environment Layout

Create a new group in an existing row on an environment layout. A new group may be created in a row on an environment layout or a compute pool layout; the new group is visible across the entire environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.

3. **Get Layouts**: Retrieve the layout for that environment.

   To create a group in a new row, select the <Action> with the `name` of `createLayoutGroup`. Use the `href` to create the new group in step 4.

   To create a group in an existing row:

   a. Select the <Row> in which the new group is desired. Use the <Row … >, with attributes to create the appropriate body in step 4.

   b.
      - Under the <Row> selected in step 3a above,
      - Select the <Action> with the `type` of `createLayoutGroup`. Use the `href` to create the new group in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Layout Groups Create**: Create the appropriate body for the call and submit to create the new group in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.7 Create a New Group on a Compute Pool Layout

Create a new group in an existing row on a compute pool layout. A new group may be created in a row on an environment layout or a compute pool layout; the new group is visible across the entire environment.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.

   To create a group in a new row, select the <Action> with the `name` of `createLayoutGroup`. Use the `href` to create the new group in step 5.

   To create a group in an existing row:

   c. Select the <Row> in which the new group is desired. Use the <Row … >, with attributes to create the appropriate body in step 5.

   d.
   - Under the <Row> selected in step 4c above,
   - Select the <Action> with the `type` of `createLayoutGroup`. Use the `href` to create the new group in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Layout Groups Create**: Create the appropriate body for the call and submit to create the new group in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.8 Rename a Row on an Environment Layout

Rename a row on an environment layout.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.

3. **Get Layouts**: Retrieve the layout for that environment.
   - Under the <Row> for which a new name is desired,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the row in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Layout Rows Edit**: Create the appropriate body for the call and submit to modify the row in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.9 Rename a Row on a Compute Pool Layout

Rename a row on a compute pool layout.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.
4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.
   - Under the <Row> for which a new name is desired,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the row in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Layout Rows Edit**: Create the appropriate body for the call and submit to modify the row in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.10 Move a Row Up on an Environment Layout

Move a row up on an environment layout. A row may be moved up on an environment layout or a compute pool layout; the change is visible across the entire environment. Move up decrements the index of the row.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.

3. **Get Layouts**: Retrieve the layout for that environment.

   - Under the <Row> for which movement is desired,
   - Select the <Action> with the `name` of `moveUp`. Use the `href` to move the row in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Layout Rows Move Up**: Move the row up on a layout.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.11 Move a Row Up on a Compute Pool Layout

Move a row up on a compute pool layout. A row may be moved up on an environment layout or a compute pool layout; the change is visible across the entire environment. Move up decrements the index of the row.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.

   - Under the <Row> for which movement is desired,
   - Select the <Action> with the `name` of `moveUp`. Use the `href` to move the row in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Layout Rows Move Up**: Move the row up on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.12 Move a Row Down on an Environment Layout

Move a row down on an environment layout. A row may be moved down on an environment layout or a compute pool layout; the change is visible across the entire environment. Move down increments the index of the row.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for that environment.
   - Under the <Row> for which movement is desired,
   - Select the <Action> with the `name` of `moveDown`. Use the `href` to move the row in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Layout Rows Move Down**: Move the row down on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.13 Move a Row Down on a Compute Pool Layout

Move a row down on a compute pool layout. A row may be moved down on an environment layout or a compute pool layout; the change is visible across the entire environment. Move down increments the index of the row.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.

   - Under the <Row> for which movement is desired,
   - Select the <Action> with the `name` of `moveDown`. Use the `href` to move the row in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Layout Rows Move Down**: Move the row down on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.14 Rename a Group on an Environment Layout

Rename a group on an environment layout.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.

3. **Get Layouts**: Retrieve the layout for that environment.

   - Under the <Group> for which a new name is desired,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the group in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Layout Groups Edit**: Create the appropriate body for the call and submit to modify the group in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.15 Rename a Group on a Compute Pool Layout

Rename a group on a compute pool layout.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.
4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.
   - Under the <Group> for which a new name is desired,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the group in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Layout Groups Edit**: Create the appropriate body for the call and submit to modify the group in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.16 Order a Group Higher on an Environment Layout

Order a group higher on an environment layout. A group may be moved to the left on an environment layout or a compute pool layout; the change is visible across the entire environment. If the group is leftmost on a lower line of a multiline row, order higher moves the group to the right end of the next higher line. Order higher decrements the index of the group.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.

3. **Get Layouts**: Retrieve the layout for that environment.

   - Under the <Group> for which movement is desired,
   - Select the <Action> with the `name` of `orderHigher`. Use the `href` to reorder the group in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Layout Groups Order Higher**: Reorder the group left and up on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.17 Order a Group Higher on a Compute Pool Layout

Order a group higher on a compute pool layout. A group may be moved to the left on an environment layout or a compute pool layout; the change is visible across the entire environment. If the group is leftmost on a lower line of a multiline row, order higher moves the group to the right end of the next higher line. Order higher decrements the index of the group.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.

4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.

   - Under the <Group> for which movement is desired,
   - Select the <Action> with the `name` of `orderHigher`. Use the `href` to reorder the group in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Layout Groups Order Higher**: Reorder the group left and up on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.18 Order a Group Lower on an Environment Layout

Order a group lower on an environment layout. A group may be moved to the right on an environment layout or a compute pool layout; the change is visible across the entire environment. If the group is rightmost on a higher line of a multiline row, order lower moves the group to the left end of the next lower line. Order lower increments the index of the group.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for that environment.
   - Under the <Group> for which movement is desired,
   - Select the <Action> with the `name` of `orderLower`. Use the `href` to reorder the group in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Layout Groups Order Lower**: Reorder the group right and down on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.19 Order a Group Lower on a Compute Pool Layout

Order a group lower on a compute pool layout. A group may be moved to the right on an environment layout or a compute pool layout; the change is visible across the entire environment. If the group is rightmost on a higher line of a multiline row, order lower moves the group to the left end of the next lower line. Order lower increments the index of the group.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the compute pool in step 4.
4. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.
    - Under the <Group> for which movement is desired,
    - Select the <Action> with the `name` of `orderLower`. Use the `href` to reorder the group in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Layout Groups Order Lower**: Reorder the group right and down on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.20 Move a Virtual Machine on an Environment Layout

Move a virtual machine on an environment layout. A virtual machine may be moved to a different layout group. Three options are possible:

- The virtual machine may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
- The virtual machine may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The virtual machine may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
    b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

    Select the <Action> with a `name` of `move`. Use the `href` to move the virtual machine in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
    - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 5.
    - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 5.
    - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 5.
5. **Action Virtual Machines Move**: Create the appropriate body for the call and submit to move the virtual machine on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.21 Move a Virtual Machine on a Compute Pool Layout

Move a virtual machine on a compute pool layout. A virtual machine may be moved to a different layout group. Three options are possible:

- The virtual machine may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
- The virtual machine may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The virtual machine may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
   a. Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
   b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 5.
4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `move`. Use the `href` to move the virtual machine in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Layouts by Compute Pool**: Retrieve the layout for that compute pool.
   - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 6.
   - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 6.
   - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 6.
6. **Action Virtual Machines Move**: Create the appropriate body for the call and submit to move the virtual machine on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.22 Move a Physical Server on an Environment Layout

Move a physical server on an environment layout. Physical servers are only visible on an environment layout. A physical server may be moved to a different layout group. Three options are possible:

- The physical server may be moved to a group currently defined in the layout of the environment. The group may be in a different row.

- The physical server may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The physical server may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <PhysicalDevice> for the desired physical device. Use the `href` to retrieve that physical device with a `type` of `physicalServer` in step 3.
    b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get Physical Servers by ID**: Retrieve information regarding a physical server.

    Select the <Action> with a `name` of `edit`. Use the `href` to move the physical server in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
    - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 5.
    - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 5.
    - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 5.
5. **Action Physical Servers Move**: Create the appropriate body for the call and submit to move the physical server on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.23 Move a Physical Router on an Environment Layout

Move a physical router on an environment layout. Physical routers are only visible on an environment layout. A physical router may be moved to a different layout group. Three options are possible:

- The physical router may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
- The physical router may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The physical router may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <PhysicalDevice> for the desired physical device. Use the `href` to retrieve that physical device with a `type` of `physicalRouter` in step 3.
    b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get Physical Routers by ID**: Retrieve information regarding a physical router.

    Select the <Action> with a `name` of `edit`. Use the `href` to move the physical router in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
    - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 5.
    - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 5.
    - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 5.
5. **Action Physical Routers Move**: Create the appropriate body for the call and submit to move the physical router on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.24 Move a High Availability Router on an Environment Layout

Move a high availability router on an environment layout. High availability routers are only visible on an environment layout. A high availability router may be moved to a different layout group. Three options are possible:

- The high availability router may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
- The high availability router may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The high availability router may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <PhysicalDevice> for the desired physical device. Use the `href` to retrieve that physical device with a `type` of `haRouter` in step 3.
    b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get High Availability Routers by ID**: Retrieve information regarding a high availability router.

    Select the <Action> with a `name` of `edit`. Use the `href` to move the high availability router in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
    - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 5.
    - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 5.
    - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 5.
5. **Action High Availability Routers Move**: Create the appropriate body for the call and submit to move the high availability router on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.25 Move a Storage Device on an Environment Layout

Move a storage device on an environment layout. Storage devices are only visible on an environment layout. A storage device may be moved to a different layout group. Three options are possible:

- The storage device may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
- The storage device may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
- The storage device may be moved to a new layout group created in a new row created in the layout of the environment.

Note: Each option requires a different request body.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
   a. Select the <PhysicalDevice> for the desired physical device. Use the `href` to retrieve that physical device with a `type` of `storageDevice` in step 3.
   b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get Storage Devices by ID**: Retrieve information regarding a storage device.

   Select the <Action> with a `name` of `edit`. Use the `href` to move the storage device in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
   - To move to an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 5.
   - To move to an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 5.
   - To move to a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 5.

5. **Action Storage Devices Move**: Create the appropriate body for the call and submit to move the storage device on a layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.26 Delete a Row from an Environment Layout

Remove a row from the layout for an environment. The environment layout includes both virtual machines and physical devices. Rows may not be removed from the compute pool layout.

Note: The row must have no groups to delete.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the row has any groups in it.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for the environment.
   - Under the <Row> with the `name` of the row desired to remove,
   - Select the <Action> with the `name` of `remove`. Use the `href` to remove the row in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Layout Rows Remove**: Remove the row from the layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.4.27 Delete a Group from an Environment Layout

Remove a group from the layout for an environment. The environment layout includes both virtual machines and physical devices. Groups may not be removed from the compute pool layout.

Note: The group must have no devices to delete.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the group has any devices in it.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 3.
3. **Get Layouts**: Retrieve the layout for the environment.
   - Under the <Group> with the `name` of the group desired to remove,
   - Select the <Action> with the `name` of `remove`. Use the `href` to remove group in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Layout Groups Remove**: Remove the group from the layout in the environment.

Return to *6.4 Layout*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5 Devices: Virtual Machines

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Advance to *6.6 Devices: Physical Devices*.

Virtual machines are managed from Devices. Virtual machines may be created, deleted, configured, and their power state modified.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.1 Retrieve a Specified Virtual Machine

Retrieve a specified virtual machine.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
   - Under the <ComputePool> for the desired compute pool,
   - Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a specified virtual machine in an environment.

Return to *6.5 Devices: Virtual Machines*.

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6.5.2 Create a Blank Server

Create a blank server. A blank server is a virtual machine created by defining every aspect of the virtual machine: compute pool, processor, memory, storage, guest operating system, and layout location. Networking and tags must be added after the virtual machine is created. While the choice of an operating system is required to correctly prepare the blank server for the guest operating system, it is up to the organization to install that operating system on the newly created server.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under the <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
   b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 8.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    a. Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
    b. Select the <Link> with the `type` of `network` to retrieve networks. Use the `href` to retrieve the available networks in step 6.
    c. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 7.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    a. Select the <Link> with the `type` of `operatingSystemFamily; type=collection` to retrieve operating systems. Use the `href` to retrieve the operating system families and operating systems available in the compute pool in step 4.
    b. If a detached disk is desired to add to the blank server, select the <Link> with the `type` of `detachedDisks; type=collection` to retrieve available detached disks. Use the `href` to retrieve the detached disks available in the compute pool in step 5.
    c. Select the <Action> with the `name` of `createBlankVirtualMachine`. Use the `href` to create the blank virtual machine in step 9.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Operating System Family / Operating System:** Retrieve the operating system families and operating systems available in the compute pool.

    - Select the <OperatingSystemFamily> with the <Name> of the desired operating system family;
    - Select the desired <OperatingSystem>. Use the <OperatingSystem … >, with attributes, to create the appropriate body in step 9.

5. **Get Detached Disks:** If a detached disk is desired to add to the blank server, retrieve the detached disks available in the compute pool.

    Select the <DetachedDisk … > with the `name` of the desired detached disk or with the desired <LastKnownVirtualMachineConfiguration>. Use the <DetachedDisk … >, with attributes, to create the appropriate body in step 9.

6. **Get Networks**: Retrieve the list of networks available in that environment.

    Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 9.

7. **Get Layouts**: Retrieve the layout for that environment.

    - To create in an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 9.
    - To create in an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 9.
    - To create in a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 9.

8. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 9.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 9.
9. **Action Virtual Machines Create Blank**: Create the appropriate body for the call and submit to create the new blank virtual machine in the compute pool.

    Select the <Task> in the response with <Operation> value of `CreateBlankVirtualMachine`. Use the `href` to poll the task in step 10.
10. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.3 Create a Server from a Template

Create a server from a template. A template speeds creating a server. Defined on the template are specific resources: compute pool, processor, memory, storage, and guest operating system; although the processor count and memory may be changed. Tags, network configuration, and layout are assigned at time of creation.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

    Under the <Organization> for the desired organization:

    a. If the operating system family for the virtual machine will be Linux, select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
    b. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 3.
    c. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 9.
2. **Get Administrative Organizations by ID**: If the operating system family for the virtual machine will be Linux, retrieve information regarding the administrative organization.

    Select the desired <SshKey>. Use the <SshKey…>, with attributes, to create the appropriate body in step 10.

3. **Get Environments by ID**: Retrieve information regarding the environment.

    a. Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 4.
    b. Select the <Link> with the `type` of `network` to retrieve networks. Use the `href` to retrieve the available networks in step 6.
    c. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 8.

4. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    a. Select the <Link> with the `type` of `template` to retrieve templates. Use the `href` to retrieve the templates available in the compute pool in step 5.
    b. Select the <Action> with the `name` of `createVirtualMachine`. Use the `href` to create the virtual machine in step 10.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Get Templates**: Retrieve the templates available in the compute pool.

    Select the desired <Template>. Use the <Template … >, with attributes, to create the appropriate body in step 10.

6. **Get Networks**: Retrieve the list of networks available in that environment.

    a. Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 10.
    b. Select the same <Network> as in 6a. Use the `href` to retrieve the available IP addresses on the network in step 7.

7. **Get Networks by ID**: Retrieve information IP address usage on that network.

    Select an <IpAddress> with no subordinate <Host> or <DetectedOn> and therefore available. The `name` attribute contains the IP address; use to create the appropriate body in step 10.

8. **Get Layouts**: Retrieve the layout for that environment.

    - To create in an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 10.
    - To create in an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 10.
    - To create in a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 10.

9. **Get Tags**: Retrieve the tags for the organization.

    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 10.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 10.

10. **Action Virtual Machines Create from Template**: Create the appropriate body for the call and submit to create the virtual machine from a template in the compute pool.

    Select the <Task> in the response with an <Operation> value of `CreateVirtualMachine`. Use the `href` to poll the task in step 11.

11. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

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6.5.4 Create a Server from a Catalog Item

A server may be created from a catalog item. All resources from the catalog item are duplicated: processor, memory, storage, guest operating system, and tags. Only network configuration and layout are assigned at time of creation.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

   b.
      - Under the <Location> in which the desired environment is located,
      - Select the <Catalog> for that location. Use the `href` to retrieve the catalog for the desired environment in step 4.

   c. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 8.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   a. Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
   b. Select the <Link> with the `type` of `network` to retrieve networks. Use the `href` to retrieve the available networks in step 6.
   c. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 7.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <Action> with the `name` of `importVirtualMachine`. Use the `href` to create the virtual machine in step 9.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Catalog by Location**: Retrieve the catalog available in that location.
    a. Select the desired <CatalogEntry>. Use the <CatalogEntry … >, with attributes, to create the appropriate body in step 9.
    b. Select <Configuration>. Use the `href` to retrieve the configuration of the catalog item in step 5.
5. **Get Catalog Configuration**: Retrieve configuration information of the specified catalog item.
    - Under <NetworkMappings>,
    - For each <NetworkMapping>,
    - Select a <Network> in step 6, and
    - Select the <Name> and use the value to create the appropriate body in step 9.
6. **Get Networks**: Retrieve the list of networks available in that environment.
    - For each <NetworkMapping> in step 5,
    - Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 9.
7. **Get Layouts**: Retrieve the layout for that environment.
    - To create in an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 9.
    - To create in an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 9.
    - To create in a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 9.
8. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 9.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 9.
9. **Action Virtual Machines Import**: Create the appropriate body for the call and submit to import the new virtual machine in the compute pool.

    Select the <Task> in the response with an <Operation> value of `ImportVirtualMachine`. Use the `href` to poll the task in step 10.
10. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.5 Create a Server by Customizable Copy

A server may be created by copying an existing server. All resources from the existing server are duplicated: compute pool, processor, memory, storage, and guest operating system; although the processor count and memory may be changed. Tags, network configuration, and layout are assigned at time of creation.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the source virtual machine is powered on or if it <Status> is not `Deployed`.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under the <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
   b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 7.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   a. Select the <ComputePool> for the compute pool in which to create the desired virtual machine. Use the `href` to call the desired compute pool in step 3.
   b. Select the <Link> with the `type` of `network` to retrieve networks. Use the `href` to retrieve the available networks in step 4.
   c. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 6.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   a. Select the desired <VirtualMachine> from which to copy. Use the <VirtualMachine … >, with attributes, to create the appropriate body in step 8.
   b. Select the <Action> with the name of `copyVirtualMachine`. Use the `href` to copy the virtual machine in step 8.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Networks**: Retrieve the list of networks available in that environment.

   a. Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 8.
   b. Select the same <Network> as in 4a. Use the `href` to call to retrieve the available IP addresses on the network in step 5.

5. **Get Networks by ID**: Retrieve information IP address usage on that network.

   Select an <IpAddress> with no subordinate <Host> or <DetectedOn> and therefore available. The `name` attribute contains the IP address; use to create the appropriate body in step 8.

6. **Get Layouts**: Retrieve the layout for that environment.
    - To create in an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 8.
    - To create in an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 8.
    - To create in a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 8.
7. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 8.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 8.
8. **Action Virtual Machines Create Copy**: Create the appropriate body for the call and submit to copy the virtual machine in the compute pool.

    Select the <Task> in the response with an <Operation> value of `CopyVirtualMachine`. Use the `href` to poll the task in step 9.
9. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.6 Create a Server by Identical Copy

A server may be created by identically copying an existing server. All resources from the existing server are duplicated: compute pool, processor, memory, storage, and guest operating system; no configuration options may be changed. Tags and layout are assigned at time of creation.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the source virtual machine is powered on or if it <Status> is not `Deployed`.

1. **Get Organizations**: Retrieve information regarding the organization.

    Under the <Organization> for the desired organization:

    a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
    b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 5.

2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <ComputePool> for the compute pool in which to create the desired virtual machine. Use the `href` to call the desired compute pool in step 3.
    b. Select the <Link> with the `type` of `deviceLayout`. Use the `href` to retrieve the layout of the environment in step 4.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    a. Select the desired <VirtualMachine> from which to copy. Use the <VirtualMachine … >, with attributes, to create the appropriate body in step 6.
    b. Select the <Action> with the name of `copyIdenticalVirtualMachine`. Use the `href` to copy the virtual machine in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Layouts**: Retrieve the layout for that environment.
    - To create in an existing group, select the desired <Group> into which to move the virtual machine. Use the <Group … >, with attributes, to create the appropriate body in step 6.
    - To create in an existing row and a new group, select the desired <Row> into which to move the virtual machine. Use the <Row … >, with attributes, and provide a name for the new group to create the appropriate body in step 6.
    - To create in a new row, a new group must be created; provide a name for the new row and a name for the new group to create the appropriate body in step 6.
5. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 6.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 6.
6. **Action Virtual Machines Create Copy Identical**: Create the appropriate body for the call and submit to copy the virtual machine in the compute pool.

    Select the <Task> in the response with an <Operation> value of `CopyIdenticalVirtualMachine`. Use the `href` to poll the task in step 7.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.7 Create a Catalog Item by Copying a Server

A catalog item may be created by copying a server. All resources from the catalog item are duplicated: processor, memory, storage, guest operating system, tags, and licensing.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the source virtual machine is powered on or if it <Status> is not `Deployed`.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under the <Organization> for the desired organization:
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the compute pool in which to create the desired virtual machine. Use the `href` to call the desired compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    a. Select the desired <VirtualMachine> from which to copy. Use the `href` to retrieve the virtual machine in step 4.
4. **Get Virtual Machines by ID**: Retrieve the virtual machine from which to copy.

    Select the <Action> with the name of `export`. Use the `href` to copy the virtual machine in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Virtual Machines Export**: Create the appropriate body for the call and submit to copy the virtual machine to the catalog item.

    Select the <Task> in the response with an <Operation> value of `Create Export Catalog Item`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.8 Rename a Virtual Machine in an Environment

A virtual machine may be renamed, given a new description, or assigned different tags.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under the <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
   b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 4.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `edit`. Use the `href` to modify the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Tags**: Retrieve the tags for the organization.

   - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
   - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

   Note: If the virtual machine has a tag that is not replicated in the body, that tag is removed.

5. **Action Virtual Machines Edit**: Create the appropriate body for the call and submit to modify the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.9 Rename a Virtual Machine in a Compute Pool

A virtual machine may be renamed, given a new description, or assigned different tags.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under the <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
   b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 5.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.i

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `edit`. Use the `href` to modify the virtual machine in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Get Tags**: Retrieve the tags for the organization.

   - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
   - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

   Note: If the virtual machine has a tag that is not replicated in the body, that tag is removed.

6. **Action Virtual Machines Edit**: Create the appropriate body for the call and submit to modify the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 7.

7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.10 Change Tags on a Virtual Machine in an Environment

To change the tags assigned to a virtual machine in an environment, follow the steps in *6.5.8 Rename a Virtual Machine in an Environment*. Modify the list of tags in the body in step 5.

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6.5.11 Change Tags on a Virtual Machine in a Compute Pool

To change the tags assigned to a virtual machine in a compute pool, follow the steps in *6.5.9 Rename a Virtual Machine in a Compute Pool*. Modify the list of tags in the body in step 5.

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6.5.12 Configure a Virtual Machine in an Environment

A virtual machine may change processors, memory, network adapters, network and IP address assigned, disks, and disk capacities after creation. Limits on changes include:

- Processors must be 1, 2, 4, or 8; some compute pools may restrict the choices further.
- Memory must be a multiple of four and may not be less than the minimum or greater than the maximum configuration for the operating system in the compute pool.
- A virtual machine must have at least one but no more than four network adapters.
- Network or networks from the available networks in the environment.
- A virtual machine must have at least one but no more than fifteen disks.
- Disk capacity may be increased to a maximum of 512GB but may not be reduced.

Note: IP addresses are managed separately from the networks and network adapters configured in this procedure.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
    b. Select the <Link> with the `type` of `network`. Use the `href` to retrieve the available networks in step 4.
3. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.

    Select the <Action> of <HardwareConfiguration>with the `name` of `edit`. Use the `href` to configure the hardware configuration of the virtual machine in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Networks**: Retrieve the list of networks available in that environment. To change the network of an existing network adapter or to add a network adapter, an available network must be selected.

   Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 5.

5. **Action Virtual Machines Edit Hardware Configuration**: Create the appropriate body for the call and submit to configure the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 6.

   Note: Network adapters and disks not replicated in the request body are removed.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.13 Configure a Virtual Machine in a Compute Pool

A virtual machine may change processors, memory, network adapters, network and IP address assigned, disks, and disk capacities after creation. Limits on changes include:

- Processors must be 1, 2, 4, or 8; some compute pools may restrict the choices further.
- Memory must be a multiple of four and may not be less than the minimum or greater than the maximum configuration for the operating system in the compute pool.
- A virtual machine must have at least one but no more than four network adapters.
- Network or networks from the available networks in the environment.
- A virtual machine must have at least one but no more than fifteen disks.
- Disk capacity may be increased to a maximum of 512GB but may not be reduced.

Note: IP addresses are managed separately from the networks and network adapters configured in this procedure.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    a. Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
    b. Select the <Link> with the `type` of `network`. Use the `href` to retrieve the available networks in step 5.
4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.
    - Under <HardwareConfiguration>,
    - Select the <Action> with the `name` of `edit`. Use the `href` to configure the hardware configuration of the virtual machine in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Networks**: Retrieve the list of networks available in that environment. To change the network of an existing network adapter or to add a network adapter, an available network must be selected.

    Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 6.
6. **Action Virtual Machines Edit Hardware Configuration**: Create the appropriate body for the call and submit to configure the virtual machine in a compute pool.

    Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 7.

    Note: Network adapters and disks not replicated in the request body are removed.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.14 Detach a Disk from a Virtual Machine in an Environment

A non-system disk may be detached from a virtual machine and made available to other virtual machines in its compute pool.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered on or has only a system disk.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.

   Select the <Action> of <HardwareConfiguration>with the `name` of `detachDisks`. Use the `href` to detach the disk from the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Virtual Machines Detach Disk**: Create the appropriate body for the call and submit to detach the disk from the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 5.

   Note: Network adapters and disks not replicated in the request body are removed.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.15 Detach a Disk from a Virtual Machine in a Compute Pool

A non-system disk may be detached from a virtual machine and made available to other virtual machines in its compute pool.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered on or has only a system disk.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.
    - Under <HardwareConfiguration>,
    - Select the <Action> with the `name` of `detachDisks`. Use the `href` to detach the disk from the virtual machine in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Detach Disk**: Create the appropriate body for the call and submit to detach the disk from the virtual machine in a compute pool.

    Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 6.

    Note: Network adapters and disks not replicated in the request body are removed.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.16 Attach a Disk to a Virtual Machine in an Environment

A non-system disk may be attached to a virtual machine from the available detached disks in its compute pool. Because the desired detached disk must be in the same compute pool as the virtual machine, this procedure is the same as the procedure **Attach a Disk to a Virtual Machine in a Compute Pool**.

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6.5.17 Attach a Disk to a Virtual Machine in a Compute Pool

A non-system disk may be attached to a virtual machine from the available detached disks in its compute pool.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered on or already has the maximum number of disks.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.
    a. Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
    b. Select the <Link> with the `type` of `detachedDisk; type=collection`. Use the `href` to to retrieve available detached disks in step 5.
4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.
    - Under <HardwareConfiguration>,
    - Select the <Action> with the `name` of `attachDisks`. Use the `href` to attach the detached disk to the virtual machine in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Detached Disks**: Retrieve the list of detached disks available in that compute pool.

    Select the <DetachedDisk> with the `name` of the desired disk and which contains the desired configuration. Use the <DetachedDisk … >, with attributes, to create the appropriate body in step 6.
6. **Action Virtual Machines Edit Hardware Configuration**: Create the appropriate body for the call and submit to attach the detached disk to the virtual machine in a compute pool.

    Select the <Task> in the response with an <Operation> value of `Attach Disk`. Use the `href` to poll the task in step 7.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.18 Retry a Failed Detach Disk Operation in an Environment

Occasionally, an detach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the first <VirtualMachine>. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine in an environment.
    a. If <PendingRetryOperation> exists, select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 4.
    b. Compare the `href` of this <VirtualMachine> to the list of <VirtualMachines> in step 2 and if the last <VirtualMachine> in the last <ComputePool> in the list, end the procedure.
    c. Advance to the next <VirtualMachine> and use the `href` to retrieve the virtual machine in step 3.
4. **Get Retry Operations Detach Disk by Virtual Machine**: Retrieve the pending retry operation.

    Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Retry Operations Detach Disk by Virtual Machine**: Retry the pending retry operation.

    Select the <Task> in the response with an <Operation> value of `Detach Virtual Disk`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.19 Retry a Failed Detach Disk Operation in a Compute Pool

Occasionally, an detach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 22.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the first <VirtualMachine>. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine in an environment.
    a. If <PendingRetryOperation> exists, select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 5.
    b. Compare the `href` of this <VirtualMachine> to the list of <VirtualMachines> in step 4 and if the last <VirtualMachine> in the last <ComputePool> in the list, end the procedure.
    c. Advance to the next <VirtualMachine> and use the `href` to retrieve the virtual machine in step 4.
5. **Get Retry Operations Detach Disk by Virtual Machine**: Retrieve the pending retry operation.

    Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
6. **Action Retry Operations Detach Disk by Virtual Machine**: Retry the pending retry operation.

    Select the <Task> in the response with an <Operation> value of `Detach Virtual Disk`. Use the `href` to poll the task in step 7.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

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6.5.20 Retry a Failed Attach Disk Operation in an Environment

Occasionally, an attach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the first <VirtualMachine>. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine in an environment.
    d. If <PendingRetryOperation> exists, select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 4.
    e. Compare the `href` of this <VirtualMachine> to the list of <VirtualMachines> in step 2 and if the last <VirtualMachine> in the last <ComputePool> in the list, end the procedure.
    f. Advance to the next <VirtualMachine> and use the `href` to retrieve the virtual machine in step 3.

4. **Get Retry Operations Attach Disk by Virtual Machine**: Retrieve the pending retry operation.

   Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Retry Operations Attach Disk by Virtual Machine**: Retry the pending retry operation.

   Select the <Task> in the response with an <Operation> value of `Attach Virtual Disk`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

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6.5.21 Retry a Failed Attach Disk Operation in a Compute Pool

Occasionally, an attach disk operation will fail. Such failed operations may be retried. If the retry is unsuccessful, call your support center for assistance.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the first <VirtualMachine>. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine in an environment.

   d. If <PendingRetryOperation> exists, select <PendingRetryOperation>. Use the `href` to retrieve the pending retry operation in step 5.
   e. Compare the `href` of this <VirtualMachine> to the list of <VirtualMachines> in step 3 and if the last <VirtualMachine> in the last <ComputePool> in the list, end the procedure.
   f. Advance to the next <VirtualMachine> and use the `href` to retrieve the virtual machine in step 4.

5. **Get Retry Operations Attach Disk by Virtual Machine**: Retrieve the pending retry operation.

   Select the <Action> with a `name` of `retryOperation`. Use the `href` to retry the pending retry operation in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

6. **Action Retry Operations Attach Disk by Virtual Machine**: Retry the pending retry operation.

   Select the <Task> in the response with an <Operation> value of `Attach Virtual Disk`. Use the `href` to poll the task in step 7.

7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.22 Manage IP Addresses on a Virtual Machine in an Environment

Add, change, or remove IP addresses assigned to a virtual machine in an environment.

Note: Changing the assigned IP address through the API changes only the information recorded about the physical server. The IP address must be changed in the operating system on the device through a console connection to the virtual machine.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.
   a. Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
   b. Select the <Link> with the `type` of `network`. Use the `href` to retrieve the available networks in step 4.

3. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.
   - Under <AssignedIpAddresses>,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the IP addresses of the virtual machine in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Networks**: Retrieve the list of networks available in that environment.
    a. Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 6.
    b. Select the same <Network> as in 4a. Use the `href` to call to retrieve the available IP addresses on the network in step 5.
5. **Get Networks by ID**: Retrieve information IP address usage on the network.

    Select an <IpAddress> with no subordinate <Host> or <DetectedOn> and therefore available. The `name` attribute contains the IP address; use to create the appropriate body in step 6.

    Note: More than one <IpAddress … > may be assigned.
6. **Action Virtual Machines Edit Assigned IP Address**: Create the appropriate body for the call and submit to modify the IP addresses on the virtual machine in an environment.

    Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 7.

    Note: Currently assigned networks and IP addresses not replicated in the request body are removed.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

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6.5.23 Manage IP Addresses on a Virtual Machine in a Compute Pool

Add, change, or remove IP addresses assigned to a virtual machine in a compute pool.

Note: Changing the assigned IP address through the API changes only the information recorded about the physical server. The IP address must be changed in the operating system on the device through a console connection to the virtual machine.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.
    a. Select the <Link> with the `type` of `network`. Use the `href` to retrieve the available networks in step 5.
    b. Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <VirtualMachine … > for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
4. **Get Virtual Machines by ID**: Retrieve information regarding the virtual machine.

    Select the <Action> of <AssignedIpAddresses>with the name of edit. Use the `href` to modify the IP addresses of the virtual machine in step 7.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Networks**: Retrieve the list of networks available in that environment.
    a. Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 7.
    b. Select the same <Network> as in 5a. Use the `href` to call to retrieve the available IP addresses on the network in step 5.
6. **Get Networks by ID**: Retrieve information IP address usage on the network.

    Select an <IpAddress> with no subordinate <Host> or <DetectedOn> and therefore available. The `name` attribute contains the IP address; use to create the appropriate body in step 6.

    Note: More than one <IpAddress … > may be assigned.
7. **Action Virtual Machines Edit Assigned IP Address**: Create the appropriate body for the call and submit to modify the IP addresses on the virtual machine in a compute pool.

    Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 8.

    Note: Currently assigned networks and IP addresses not replicated in the request body are removed.
8. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

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6.5.24 Power On a Virtual Machine in an Environment

Change the power state to on for a virtual machine in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered on.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:powerOn`. Use the `href` to power on the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Virtual Machines Power On**: Power on the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Power on Server`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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Return to *6 Application Programming Interface Programmer's Guide*.

6.5.25 Power On a Virtual Machine in a Compute Pool

Change the power state to on for a virtual machine in a compute pool.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered on.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:powerOn`. Use the `href` to power on the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Power On**: Power on the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Power on Server`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.26 Reboot a Virtual Machine in an Environment

Reboot a virtual machine in an environment; equivalent to pressing the reset button on a computer.

Note: The virtual machine must be powered on to reboot.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:reboot`. Use the `href` to reboot the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Virtual Machines Power Reboot**: Reboot the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Restart Server`. Use the `href` to poll the task in step 5.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.27 Reboot a Virtual Machine in a Compute Pool

Reboot a virtual machine in a compute pool; equivalent to pressing the reset button on a computer.

Note: The virtual machine must be powered on to reboot.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:reboot`. Use the `href` to reboot the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Power Reboot**: Reboot the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Restart Server`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.28 Shutdown a Virtual Machine in an Environment

Shutdown a virtual machine in an environment; request the guest operating system to initiate an orderly shutdown of the virtual machine.

Note: The virtual machine must be powered on and must have VMware Tools installed and running to shutdown.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off or VMware Tools are not running.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:shutdown`. Use the `href` to shutdown the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Virtual Machines Power Shutdown**: Shutdown the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Shutdown Server`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.29 Shutdown a Virtual Machine in a Compute Pool

Shutdown a virtual machine in a compute pool; request the guest operating system to initiate an orderly shutdown of the virtual machine.

Note: The virtual machine must be powered on and must have VMware Tools installed and running to shutdown.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off or VMware Tools are not running.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:shutdown`. Use the `href` to shutdown the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Virtual Machines Power Shutdown**: Shutdown the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Shutdown Server`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.30 Power Off a Virtual Machine in an Environment

Change the power state to off for a virtual machine in an environment; this call abruptly changes the power state to off of the virtual machine, which is equivalent to pulling the plug.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

    Select the <Action> with a `name` of `power:powerOff`. Use the `href` to power off the virtual machine in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Virtual Machines Power Off**: Power off the virtual machine in an environment.

    Select the <Task> in the response with an <Operation> value of `Power off Server`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.31 Power Off a Virtual Machine in a Compute Pool

Change the power state to off for a virtual machine in a compute pool; this call abruptly changes the power state to off for the virtual machine, which is equivalent to pulling the plug.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the virtual machine is powered off.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `power:powerOff`. Use the `href` to power off the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Power Off**: Power off the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Power off Server`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.5.32 Mount VMware Tools on a Virtual Machine in an Environment

Mount VMware Tools on a virtual machine in an environment. This enables an organization to install VMware Tools on a virtual machine.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if VMware Tools are mounted.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `tools:mount`. Use the `href` to mount VMware Tools the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Virtual Machines Tools Mount**: Mount VMware Tools on the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Mount Tools`. Use the `href` to poll the task in step 5.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.33 Mount VMware Tools on a Virtual Machine in a Compute Pool

Mount VMware Tools on a virtual machine in a compute pool. This enables an organization to install VMware Tools on a virtual machine.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if VMware Tools are mounted.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `tools:mount`. Use the `href` to mount VMware Tools on the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Tools Mount**: Mount VMware Tools on the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Mount Tools`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.34 Install VMware Tools on a Virtual Machine in an Environment

VMware Tools may not be installed through the API. To install VMware Tools on a virtual machine in an environment, one must connect to the console of the virtual machine through the Enterprise Cloud Infinicenter Console and install from the virtual machine console.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.35 Install VMware Tools on a Virtual Machine in a Compute Pool

VMware Tools may not be installed through the API. To install VMware Tools on a virtual machine in a compute pool, one must connect to the console of the virtual machine through the Enterprise Cloud Infinicenter Console and install from the virtual machine console.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.36 Unmount VMware Tools from a Virtual Machine in an Environment

Unmount VMware Tools from a virtual machine in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if VMware Tools are not mounted.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

    Select the <Action> with a `name` of `tools:unmount`. Use the `href` to unmount VMware Tools from the virtual machine in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Virtual Machines Tools Unmount**: Unmount VMware Tools from the virtual machine in an environment.

   Select the <Task> in the response with an <Operation> value of `Unmount Tools`. Use the `href` to poll the task in step 5.

5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.37 Unmount VMware Tools from a Virtual Machine in a Compute Pool

Unmount VMware Tools from a virtual machine in a compute pool.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if VMware Tools are not mounted.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.

3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.

4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `tools:unmount`. Use the `href` to unmount VMware Tools from the virtual machine in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Virtual Machines Tools Unmount**: Unmount VMware Tools from the virtual machine in a compute pool.

   Select the <Task> in the response with an <Operation> value of `Unmount Tools`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.38 Delete a Virtual Machine from an Environment

Remove a virtual machine from an environment.

Note: The virtual machine must be power state of off to remove.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the power state of the virtual machine is not off.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.
3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Action> with a `name` of `remove`. Use the `href` to remove the virtual machine in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Virtual Machines Remove**: Remove the virtual machine from a compute pool.

   Select the <Task> in the response with an <Operation> value of `Delete Server`. Use the `href` to poll the task in step 5.
5. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.39 Delete a Virtual Machine from a Compute Pool

Remove a virtual machine from a compute pool.

Note: The virtual machine must be power state of off to remove.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the power state of the virtual machine is not off.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <ComputePool> for the desired compute pool. Use the `href` to retrieve that compute pool in step 3.
3. **Get Compute Pools by ID**: Retrieve information regarding the compute pool.

    Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 4.
4. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

    Select the <Action> with a `name` of `remove`. Use the `href` to remove the virtual machine in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Virtual Machines Remove**: Remove the virtual machine from a compute pool.

    Select the <Task> in the response with an <Operation> value of `Delete Server`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.5.40 Retrieve Tasks for a Virtual Machine

Retrieve the tasks for a virtual machine. Tasks present a history of changes to the virtual machine and are retained for a year. The call to retrieve the tasks may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
    - Under the <ComputePool> for the desired compute pool,
    - Select the <VirtualMachine> for the desired virtual machine. Use the `href` to retrieve that virtual machine in step 3.

3. **Get Virtual Machines by ID**: Retrieve information regarding a virtual machine.

   Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks for the virtual machine in step 4.

4. **Get Tasks by Virtual Machine**: Attach query parameters, if desired, and retrieve the tasks for the virtual machine.

Return to *6.5 Devices: Virtual Machines*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6 Devices: Physical Devices

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Advance to *6.7 Network Summary*.

Physical devices are managed from Devices. Physical devices may be renamed and moved.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.1 Retrieve a Specified Physical Server

Retrieve information regarding a specified physical server.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `physicalServer` and the `name` is that of the desired physical server. Use the `href` to retrieve that physical server in step 3.
3. **Get Physical Servers by ID**: Retrieve information regarding a specified physical server in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.2 Retrieve a Specified Physical Router

Retrieve information regarding a specified physical router.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `physicalRouter` and the `name` is that of the desired physical router. Use the `href` to retrieve that physical router in step 3.
3. **Get Physical Routers by ID**: Retrieve information regarding a specified physical router in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.3 Retrieve a Specified High Availability Router

Retrieve information regarding a specified high availability router.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `haRouter` and the `name` is that of the desired high availability router. Use the `href` to retrieve that high availability router in step 3.
3. **Get High Availability Routers by ID**: Retrieve information regarding a specified high availability router in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.4 Retrieve a Specified Storage device

Retrieve information regarding a specified storage device.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <PhysicalDevice> where the `type` is `storageDevice` and the `name` is that of the desired storage device. Use the `href` to retrieve that storage device in step 3.
3. **Get Storage Devices by ID**: Retrieve information regarding a specified storage device in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.5 Rename a Physical Server in an Environment

A physical device may be renamed, given a new description, or assigned different tags.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   Under the <Organization> for the desired organization:

   a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
   b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 4.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <PhysicalDevice> where the `type` is `physicalServer` and the `name` is that of the desired physical server. Use the `href` to retrieve the physical server in step 3.
3. **Get Physical Servers by ID**: Retrieve information regarding a physical server.

   Select the <Action> with a `name` of `edit`. Use the `href` to modify the physical server in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

    Note: If the physical server has a tag that is not replicated in the body, that tag is removed.

5. **Action Physical Servers Edit**: Create the appropriate body for the call and submit to modify the physical server in an environment.

    Select the <Task> in the response with an <Operation> value of `Rename Device`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.6 Rename a Physical Router in an Environment

A physical router may be renamed, given a new description, or assigned different tags.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

    Under the <Organization> for the desired organization:

    a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
    b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 4.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `physicalRouter` and the `name` is that of the desired physical router. Use the `href` to retrieve that physical router in step 3.

3. **Get Physical Routers by ID**: Retrieve information regarding a physical router.

    Select the <Action> with a `name` of `edit`. Use the `href` to modify the physical router in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

    Note: If the physical router has a tag that is not replicated in the body, that tag is removed.

5. **Action Physical Routers Edit**: Create the appropriate body for the call and submit to modify the physical router in an environment.

    Select the <Task> in the response with an <Operation> value of `Rename Device`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.7 Rename a High Availability Router in an Environment

A high availability router may be renamed, given a new description, or assigned different tags.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

    Under the <Organization> for the desired organization:

    a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
    b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 4.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `haRouter` and the `name` is that of the desired high availability router. Use the `href` to retrieve that high availability router in step 3.

3. **Get High Availability Routers by ID**: Retrieve information regarding a physical router.

    Select the <Action> with a `name` of `edit`. Use the `href` to modify the high availability router in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

    Note: If the high availability router has a tag that is not replicated in the body, that tag is removed.

5. **Action High Availability Routers Edit**: Create the appropriate body for the call and submit to modify the high availability router in an environment.

    Select the <Task> in the response with an <Operation> value of `Rename Device`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.8 Rename a Storage Device in an Environment

A storage device may be renamed, given a new description, or assigned different tags.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

    Under the <Organization> for the desired organization:

    a. Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
    b. Select the <Link> with the `type` of `deviceTag`. Use the `href` to retrieve the tags of the organization in step 4.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `storageDevice` and the `name` is that of the desired storage device. Use the `href` to retrieve that storage device in step 3.

3. **Get Storage Devices by ID**: Retrieve information regarding a physical router.

    Select the <Action> with a `name` of `edit`. Use the `href` to modify the storage device in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Tags**: Retrieve the tags for the organization.
    - To use an existing tag, select the<DeviceTag> with the desired `name`. Use the value of the `name` attribute in the <Tag> of the body to create the appropriate body in step 5.
    - To create a new tag in the organization, use a new value in the <Tag> of the body to create the appropriate body in step 5.

    Note: If the storage device has a tag that is not replicated in the body, that tag is removed

5. **Action Storage Devices Edit**: Create the appropriate body for the call and submit to modify the storage device in an environment.

    Select the <Task> in the response with an <Operation> value of `Rename Device`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.9 Change Tags on a Physical Server in an Environment

To change the tags assigned to a physical server in an environment, follow the steps in *6.6.5 Rename a Physical Server in an Environment*. Modify the list of tags in the body in step 5.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.10 Change Tags on a Physical Router in an Environment

To change the tags assigned to a physical router in an environment, follow the steps in *6.6.6 Rename a Physical Router in an Environment*. Modify the list of tags in the body in step 5.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.11 Change Tags on a High Availability Router in an Environment

To change the tags assigned to a high availability router in an environment, follow the steps in *6.6.7 Rename a High Availability Router in an Environment*. Modify the list of tags in the body in step 5.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.12 Change Tags on a Storage Device in an Environment

To change the tags assigned to a storage device in an environment, follow the steps in *6.6.8 Rename a Storage Device in an Environment*. Modify the list of tags in the body in step 5.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.13 Manage IP Addresses on a Physical Server in an Environment

The only configuration change permitted on a physical server is to add, change, or remove IP addresses assigned.

Note: Changing the assigned IP address through the API changes only the information recorded about the physical server. The IP address must be changed in the operating system on the device through a console connection to the physical server.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.
   a. Select the <PhysicalDevice … > with a `type` of `physicalServer` and a `name` of the desired physical server. Use the `href` to retrieve that physical server in step 3.
   b. Select the <Link> with the `type` of `network`. Use the `href` to retrieve the available networks in step 4.
3. **Get Physical Servers by ID**: Retrieve information regarding the physical server.
   - Under <AssignedIpAddresses>,
   - Select the <Action> with the `name` of `edit`. Use the `href` to modify the IP addresses of the virtual machine in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Networks**: Retrieve the list of networks available in that environment.
   a. Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 6.
   b. Select the same <Network> as in 4a. Use the `href` to call to retrieve the available IP addresses on the network in step 5.

5. **Get Networks by ID**: Retrieve information IP address usage on the network.

   Select an <IpAddress> with no subordinate <Host> or <DetectedOn> and therefore available. The `name` attribute contains the IP address; use to create the appropriate body in step 6.

   Note: More than one <IpAddress … > may be assigned.

6. **Action Physical Servers Edit Assigned IP Address**: Create the appropriate body for the call and submit to modify the IP addresses on the physical server in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Server`. Use the `href` to poll the task in step 7.

   Note: Currently assigned networks and IP addresses not replicated in the request body are removed.

7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.14 Retrieve Tasks for a Physical Server

Retrieve the tasks for a physical server. Tasks present a history of changes to the physical server and are retained for a year. The call to retrieve the tasks may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <PhysicalDevice> where the `type` is `PhysicalServer` and the `name` is that of the desired physical server. Use the `href` to retrieve that physical server in step 3.

3. **Get Physical Servers by ID**: Retrieve information regarding a physical server.

   Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks for the physical server in step 4.

4. **Get Tasks by Physical Server**: Attach query parameters, if desired, and retrieve the tasks for the physical server in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.15 Retrieve Tasks for a Physical Router

Retrieve the tasks for a physical router. Tasks present a history of changes to the physical router and are retained for a year. The call to retrieve the tasks may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `physicalRouter` and the `name` is that of the desired physical router. Use the `href` to retrieve that physical router in step 3.
3. **Get Physical Routers by ID**: Retrieve information regarding a physical router.

    Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks for the physical router in step 4.
4. **Get Tasks by Physical Router**: Attach query parameters, if desired, and retrieve the tasks for the physical router in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.16 Retrieve Tasks for a High Availability Router

Retrieve the tasks for a high availability router. Tasks present a history of changes to the high availability router and are retained for a year. The call to retrieve the tasks may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <PhysicalDevice> where the `type` is `haRouter` and the `name` is that of the desired high availability router. Use the `href` to retrieve that high availability router in step 3.
3. **Get High Availability Routers by ID**: Retrieve information regarding a high availability router.

    Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks for the high availability router in step 4.
4. **Get Tasks by High Availability Router**: Attach query parameters, if desired, and retrieve the tasks for the high availability router in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.6.17 Retrieve Tasks for a Storage device

Retrieve the tasks for a storage device. Tasks present a history of changes to the storage device and are retained for a year. The call to retrieve the tasks may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <PhysicalDevice> where the `type` is `storageDevice` and the `name` is that of the desired storage device. Use the `href` to retrieve that storage device in step 3.
3. **Get Storage Devices by ID**: Retrieve information regarding a storage device.

   Select the <Link> with a `type` of `task; type=collection`. Use the `href` to retrieve the tasks for the storage device in step 4.
4. **Get Tasks by Storage Device**: Attach query parameters, if desired, and retrieve the tasks for the storage device in an environment.

Return to *6.6 Devices: Physical Devices*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7 Network Summary

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Advance to *6.8 Public IPs*.

Network Summary presents an overview of the network components related to Internet services in the Enterprise Cloud.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.1 Retrieve Network Summary for an Environment

Retrieve an overview of the network in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.2 Retrieve Public IPs

Retrieve all the public IP addresses in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IP addresses for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.3 Retrieve RNATs

Retrieve the reverse network address translations (RNATs) assigned to networks and devices in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

    Select the <Link> with the `type` of `rnatConfiguration`. Use the `href` to retrieve the RNATs for the environment in step 4.
4. **Get RNATs**: Retrieve information regarding RNATs in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.4 Retrieve Networks

Retrieve the networks in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

    Select the <Link> with the `type` of `network; type=collection`. Use the `href` to retrieve the network summary for the environment in step 4.
4. **Get Networks**: Retrieve information regarding the networks in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.5 Retrieve Network Hosts

Retrieve the network hosts in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

    Select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 4.
4. **Get Network Hosts**: Retrieve information regarding the network hosts in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.6 Retrieve Network Host Details

Retrieve the details regarding a specified network host in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary in an environment.

    Select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 4.
4. **Get Network Hosts**: Retrieve information regarding the network hosts in an environment.

    Select the <Host> with the `name` of the desired host. Use the `href` to retrieve the network host for the environment in step 5.
5. **Get Network Hosts by ID**: Retrieve information regarding a specified network host in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.7 Retrieve Internet Services

Retrieve the Internet services in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the first <InternetService> of <InternetServices>. Use the `href` to retrieve the Internet service in step 4.
4. **Get Internet Services by ID**: Retrieve information regarding the Internet service in an environment.
    g. Compare the `href` of this <InternetService> to the list of <InternetServices> in step 3 and if the last <InternetService> in the list, end the procedure.
    h. Advance to the next <InternetService> and use the `href` to retrieve the Internet service in step 4.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.8 Retrieve Backup Internet Services

Retrieve the backup Internet services in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 4.
4. **Get Backup Internet Services**: Retrieve information regarding the backup Internet services.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.9 Retrieve Node Services

Retrieve the node services in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.
    - Under <NodeServices>,
    - Select the first <NodeService>. Use the `href` to retrieve the node service in step 4.
4. **Get Node Services by ID**: Retrieve information regarding the node service in an environment.
    a. Compare the `href` of this <NodeService> to the list of <NodeServices> in step 3 and if the last <NodeService> in the list, end the procedure.
    b. Advance to the next <NodeService>and use the `href` to retrieve the node service in step 4.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.10 Retrieve IP Address Usage

Retrieve the IP addresses on a specified network in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the `href` to retrieve the IP address usage for that network in step 3.
3. **Get Networks by ID**: Retrieve information regarding IP address usage on a specified network in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.11 Reserve an IP Address

Reserve a specified IP address on a network in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the IP address is reserved.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the `href` to retrieve the IP address usage for that network in step 3.
3. **Get Networks by ID**: Retrieve information regarding IP address usage on a specified network in an environment.
   - Select the <IpAddress> which is desired to reserve,
   - Select the <Action> with the `name` of `reserve`. Use the `href` to reserve the IP address in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action IP Addresses Reserve**: Create the appropriate body for the call and submit to reserve a specified IP address on a network.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.12 Unreserve an IP Address

Unreserve a specified IP address on a network in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the IP address is not reserved.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the `href` to retrieve the IP address usage for that network in step 3.

3. **Get Networks by ID**: Retrieve information regarding IP address usage on a specified network in an environment.

    - Select the <IpAddress> which is desired to unreserve,
    - Select the <Action> with the `name` of `unreserve`. Use the `href` to reserve the IP address in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action IP Addresses Unreserve**: Create the appropriate body for the call and submit to unreserve a specified IP address on a network.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.7.13 Change Reserved State of IP Addresses

Change the reserved state of IP addresses on a specified network in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if no IP addresses are available to reserve or unreserve.

1. **Get Organizations**: Retrieve information regarding the organization.

    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the `href` to retrieve the IP address usage for that network in step 3.

3. **Get Networks by ID**: Retrieve information regarding IP address usage on a specified network in an environment.

    a.
    - Select the <IpAddress>, more than one may be selected, on which the reserved state is desired to change. Under the <IpAddress>,
    - Use the <Reserved> and change the value to the desired state. Use the <IpAddress … >, with attributes and child <Reserved>, to create the appropriate body in step 4.

    b. Select the <Action> with the `name` of `configureIpReservation`. Use the `href` to change the reserved state of IP addresses in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action IP Addresses Configure Reservation**: Create the appropriate body for the call and submit to change the reserved state of IP addresses on a specified network in an environment.

Return to *6.7 Network Summary*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.8 Public IPs

6.8.1 Activate a Public IP 153

Advance to *6.9 RNATs*.

Perform tasks related to public IP addresses.

Return to *6 Application Programming Interface Programmer's Guide*.

6.8.1 Activate a Public IP

Activate a new public IP address in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if no public IP addresses are available to activate.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Action> with the `name` of `activatePublicIp`. Use the `href` to activate the public IP address in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Public IPs Activate**: Activate a new public IP address in an environment.

Return to *6.8 Public IPs*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.9 RNATs

6.9.1 Edit a Network RNAT Association 154

6.9.2 Create a Device RNAT Association 155

6.9.3 Edit a Device RNAT Association 156

6.9.4 Delete a Device RNAT Association.....156

Advance to *6.10 Internet Services*.

Reverse network address translations associate networks and device IP addresses to a specific public IP address.

Return to *6 Application Programming Interface Programmer's Guide*.

6.9.1 Edit a Network RNAT Association

Networks are always associated with a public IP. When first created, a network is associated to the default RNAT. The only action for networks is to change the public IP to which they are associated.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `rnatConfiguration`. Use the `href` to retrieve the RNATs for the environment in step 4.
4. **Get RNATs**: Retrieve information regarding the RNATs in that environment.
   a. Select the <Rnat>, which contains a <PublicIp> where the `name` is the desired public IP address. Use the <Rnat … >, with attributes, to create the appropriate body in step 5.
   b.
      - Under the <NetworkRnat> with the `name` of the desired address and prefix length,
      - Select the <Action>with a `name` of `edit` where the name is the network address and network prefix length of the desired network. Use the `href` to edit the RNAT in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Associations Edit Network**: Create the appropriate body for the call and submit to edit the network RNAT association in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure RNAT Association`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.9 RNATs*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.9.2 Create a Device RNAT Association

Network hosts may be associated with a public IP. If not otherwise configured, network hosts will use the default RNAT.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.
   a. Select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 4.
   b. Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IP addresses for the environment in step 5.
   c. Select the <Action>with a `name` of `createRnatAssociation`. Use the `href` to create the RNAT association in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Network Hosts**: Retrieve information regarding the network hosts in that environment.
   - Under the <Host> where the `name` is the desired device,
   - Select the <IpAddress> where the `name` is the desired IP address. Use the <IpAddress … >, with attributes, to create the appropriate body in step 6.
5. **Get Public IPs**: Retrieve information regarding public IP addresses.

   Select the <PublicIp> where the `name` is the desired public IP address. Use the <PublicIp … >, with attributes, to create the appropriate body in step 6.
6. **Action Associations Create Device**: Create the appropriate body for the call and submit to create the device RNAT association in an environment.

Return to *6.9 RNATs*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.9.3 Edit a Device RNAT Association

To modify the RNAT association of a network host, remove the device RNAT as described in *6.9.4 Delete a Device RNAT Association* and then add a new device RNAT as described in*6.9.2 Create a Device RNAT Association*.

Return to *6.9 RNATs*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.9.4 Delete a Device RNAT Association

Remove the reverse network address translations (RNATs) assigned to a network host in an environment.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `rnatConfiguration`. Use the `href` to retrieve the RNATs for the environment in step 4.
4. **Get RNATs**: Retrieve information regarding the RNATs in that environment.
   - Under the <Rnat> where the `name` is the public IP address of the desired public IP,
   - Under the <Association> where the `name` is the IP address of the desired host,
   - Under the <IpAddress> where the `name` is the desired IP address and contains the <Host> where the `name` is the name of the desired device,
   - Select the <Action> where the `name` is `remove`. Use the `href` to remove the RNAT association in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Associations Remove Device**: Remove the device RNAT association from a network host in an environment.

   Select the <Task> in the response with an <Operation> value of `Delete RNAT Association`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.9 RNATs*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10 Internet Services

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6.10.16 Disable a Monitor 172

Advance to *6.11 Node Services*.

Internet services are applications assigned to a public IP address.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10.1 Create an Internet Service

Create an Internet service in an environment.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   a. If a trusted network group is to be the source, select the <Link> with the `type` of `trustedNetworkGroup; type=collection`. Use the `href` to retrieve the trusted network groups for the environment in step 6.
   b. If a backup Internet service is to be associated, select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 7.
   c. Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IP addresses in step 4.

4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address to be used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.

5. **Get Public IPs by ID**: Retrieve information regarding the public IP address.

   Select the <Action> where the `name` is `createInternetService`. Use the `href` to create the Internet service in step 8.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

6. **Get Trusted Network Groups**: If a trusted network group is to be the source, retrieve information regarding the trusted network groups in that environment.

   - Select the <TrustedNetworkGroup> where the `name` is the desired trusted network group, or
   - Select the <TrustedNetworkGroup> where under the <Hosts> is the <IpAddress>of the desired host or hosts and under <Networks> is a <Network> where <Address> is the desired network address and <Size> is the desired network prefix length.
   - Use the <TrustedNetworkGroup … >, with attributes, to create the appropriate body in step 8.

7. **Get Backup Internet Services**: If a backup Internet service is to be associated, retrieve information regarding the backup Internet services in that environment.

   Select the <BackupInternetService> that contains a <Protocol> where the value the same as this Internet service. Use the <BackupInternetService … >, with attributes, to create the appropriate body in step 8.

8. **Action Internet Services Create**: Create the appropriate body for the call and submit to create the Internet service on a public IP address.

Return to *6.10 Internet Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10.2 Edit an Internet Service

Modify an Internet service in an environment. The following may be changed on an Internet service:

- Name
- Source: any or trusted network group
- Service description
- Redirect URL
- Persistence type and timeout
- Enable or disable traffic to node services
- Backup Internet service association
- Load balancing algorithm

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.
    a. If a trusted network group is to be the source, select the <Link> with the `type` of `trustedNetworkGroup; type=collection`. Use the `href` to retrieve the trusted network groups for the environment in step 6.
    b. If a backup Internet service is to be associated, select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 7.
    c. Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

    Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
    - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
    - Select the <Action> where the `name` is `edit`. Use the `href` to modify the Internet service in step 8.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

6. **Get Trusted Network Groups**: If a trusted network group is to be the source, retrieve information regarding the trusted network groups in that environment.
    - Select the <TrustedNetworkGroup> where the `name` is the desired trusted network group, or
    - Select the <TrustedNetworkGroup> where under the <Hosts> is the <IpAddress>of the desired host or hosts and under <Networks> is a <Network> where <Address> is the desired network address and <Size> is the desired network prefix length.
    - Use the <TrustedNetworkGroup … >, with attributes, to create the appropriate body in step 8.
7. **Get Backup Internet Services**: If a backup Internet service is to be associated, retrieve information regarding the backup Internet services in that environment.

    Select the <BackupInternetService> that contains a <Protocol> where the value is the same as this Internet service. Use the <BackupInternetService … >, with attributes, to create the appropriate body in step 8.
8. **Action Internet Services Edit**: Create the appropriate body for the call and submit to modify the Internet service in an environment.

    Select the <Task> in the response with an <Operation> value of `Configure Internet Service`. Use the `href` to poll the task in step 9.
9. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.10.3 Delete an Internet Service

Remove an Internet service from an environment.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the Internet service is associated with any node services or backup Internet services.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.

4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.

5. **Get Public IPs by ID**: Retrieve information regarding the public IP.

   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Action> where the `name` is `remove`. Use the `href` to remove the Internet service in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

6. **Action Internet Services Remove**: Remove the Internet service from an environment.

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6.10.4 Create a Backup Internet Service

Create a backup Internet service in an environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Action> with the `name` of `createBackupInternetService`. Use the `href` to create the backup Internet service in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Backup Internet Services Create**: Create the appropriate body for the call and submit to create the backup Internet service in an environment.

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6.10.5 Edit a Backup Internet Service

Modify a backup Internet service in an environment. The following may be changed on an Internet service:

- Name
- Source, any or trusted network group
- Service description
- Redirect URL
- Persistence type and timeout
- Enable or disable traffic to node services
- Internet service association

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 4.
4. **Get Backup Internet Services**: Retrieve information regarding the backup Internet services in that environment.
   - Under the first <BackupInternetService> that contains the desired value in <Protocol>
   - Select the <Action> where the `name` is `edit`. Use the `href` to modify the backup Internet service in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Backup Internet Services Edit**: Create the appropriate body for the call and submit to modify the backup Internet service in an environment.

   Select the <Task> in the response with an <Operation> value of `Edit Backup Internet Service`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.10.6 Delete a Backup Internet Service

Remove a backup Internet service from an environment.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the backup Internet service is associated with any node services or Internet services.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 4.
4. **Get Backup Internet Services**: Retrieve information regarding the backup Internet services in that environment.
   - Under the first <BackupInternetService> that contains the desired value in <Protocol>,
   - Select the <Action> where the `name` is `remove`. Use the `href` to remove the backup Internet service in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Backup Internet Services Remove**: Remove the backup Internet service from an environment.

   Select the <Task> in the response with an <Operation> value of `Delete Backup Internet Service`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.10 Internet Services*.

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6.10.7 Create a Default Monitor

Create a default monitor or change the monitor to a default monitor on an Internet service. Monitors probe the servers on an Internet service to ensure availability.

Note: If an Internet service currently has a custom monitor (ping, HTTP, ECV, or loopback monitor) the default monitor must first be created on the Internet service and then the custom monitor created.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Action> where the `name` is `createDefaultMonitor`. Use the `href` to create the Internet service default monitor in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
6. **Action Monitors Create Default**: Create the default monitor on the Internet service in an environment.

Return to *6.10 Internet Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10.8 Create a Ping Monitor

Create a ping monitor or change the monitor to a ping monitor on an Internet service. Monitors probe the servers on an Internet service to ensure availability.

Note: If an Internet service currently has a custom monitor (HTTP, ECV, or loopback monitor) the default monitor must first be created on the Internet service and then the custom monitor created.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the current monitor is a custom monitor: HTTP, ECV, or loopback.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Action> where the `name` is `createPingMonitor`. Use the `href` to create the Internet service ping monitor in step 7.
   - If the attribute `actionDisabled` is set to `disabled` on the desired monitor, select the <Action> where the `name` is `createDefaultMonitor`. Use the `href` to create the Internet service default monitor in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
6. **Action Monitors Create Default**: If the attribute `actionDisabled` is set to `disabled` on the <Action> for the desired monitor, create the default monitor on the Internet service.
7. **Action Monitors Create Ping**: Create the appropriate body for the call and submit to create the ping monitor in an environment.

Return to *6.10 Internet Services*.

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6.10.9 Create an HTTP Monitor

Create an HTTP monitor or change the monitor to an HTTP monitor on an Internet service. Monitors probe the servers on an Internet service to ensure availability.

Note: If an Internet service currently has a custom monitor (ping, ECV, or loopback monitor) the default monitor must first be created on the Internet service and then the HTTP monitor created.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the current monitor is a custom monitor: ping, ECV, or loopback.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Action> where the `name` is `createHttpMonitor`. Use the `href` to create the Internet service HTTP monitor in step 7.
   - If the attribute `actionDisabled` is set to `disabled` on the monitor, select the <Action> where the `name` is `createDefaultMonitor`. Use the `href` to create the Internet service default monitor in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
6. **Action Monitors Create Default**: If the attribute `actionDisabled` is set to `disabled` on the <Action> for the HTTP monitor, create the default monitor on the Internet service.
7. **Action Monitors Create HTTP**: Create the appropriate body for the call and submit to create the HTTP monitor in an environment.

Return to *6.10 Internet Services*.

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6.10.10 Create an ECV Monitor

Create an ECV monitor or change the monitor to an ECV monitor on an Internet service. Monitors probe the servers on an Internet service to ensure availability.

Note: If an Internet service currently has a custom monitor (ping, HTTP, or loopback monitor) the default monitor must first be created on the Internet service and then the ECV monitor created.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the current monitor is a custom monitor: ping, HTTP, or loopback.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Action> where the `name` is `createEcvMonitor`. Use the `href` to create the Internet service ECV monitor in step 7.
   - If the attribute `actionDisabled` is set to `disabled` on the desired monitor, select the <Action> where the `name` is `createDefaultMonitor`. Use the `href` to create the Internet service default monitor in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
6. **Action Monitors Create Default**: If the attribute `actionDisabled` is set to `disabled` on the <Action> for the desired monitor, create the default monitor on the Internet service.
7. **Action Monitors Create ECV**: Create the appropriate body for the call and submit to create the ECV monitor in an environment.

Return to *6.10 Internet Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10.11 Create a Loopback Monitor

Create a loopback monitor or change the monitor to a loopback monitor on an Internet service. Monitors probe the servers on an Internet service to ensure availability.

Note: The loopback monitor does not probe the actual servers and therefore does not ensure service availability. Use of the loopback monitor is not recommended.

Note: If an Internet service currently has a custom monitor (ping, HTTP, or ECV monitor) the default monitor must first be created on the Internet service and then the loopback monitor created.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the current monitor is a custom monitor: ping, HTTP, or ECV monitor.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

    Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
    - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
    - Select the <Action> where the `name` is `createLoopbackMonitor`. Use the `href` to create the Internet service loopback monitor in step 7.
    - If the attribute `actionDisabled` is set to `disabled` on the desired monitor, select the <Action> where the `name` is `createDefaultMonitor`. Use the `href` to create the Internet service default monitor in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.

6. **Action Monitors Create Default**: If the attribute `actionDisabled` is set to `disabled` on the <Action> for the desired monitor, create the default monitor on the Internet service.
7. **Action Monitors Create Loopback**: Create the loopback monitor on the Internet service in an environment.

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6.10.12 Edit a Ping Monitor

Modify the performance characteristics of a ping monitor.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Monitor>. Use the `href` to modify the Internet service ping monitor in step 6.
6. **Get Monitors by Internet Service**: Retrieve information regarding the monitor on the Internet service.

   Select the <Action> where the `name` is `edit`. Use the `href` to modify the ping monitor in step 7.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
7. **Action Monitors Edit Ping**: Create the appropriate body and submit to modify the ping monitor on the Internet service in an environment.

Return to *6.10 Internet Services*.

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6.10.13 Edit an HTTP Monitor

Modify the performance characteristics of an HTTP monitor.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Monitor>. Use the `href` to modify the Internet service HTTP monitor in step 6.
6. **Get Monitors by Internet Service**: Retrieve information regarding the monitor on the Internet service.

   Select the <Action> where the `name` is `edit`. Use the `href` to modify the HTTP monitor in step 7.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
7. **Action Monitors Edit HTTP**: Create the appropriate body and submit to modify the HTTP monitor on the Internet service in an environment.

Return to *6.10 Internet Services*.

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6.10.14 Edit an ECV Monitor

Modify the performance characteristics of an ECV monitor.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
   - Select the <Monitor>. Use the `href` to modify the Internet service ECV monitor in step 6.
6. **Get Monitors by Internet Service**: Retrieve information regarding the monitor on the Internet service.

   Select the <Action> where the `name` is `edit`. Use the `href` to modify the ECV monitor in step 7.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
7. **Action Monitors Edit ECV**: Create the appropriate body and submit to modify the ECV monitor on the Internet service in an environment.

Return to *6.10 Internet Services*.

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6.10.15 Enable a Monitor

Enable a ping, HTTP, or ECV monitor that is disabled.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the monitor is enabled.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

    Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
    - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
    - Select the <Monitor>. Use the `href` to enable the Internet service monitor in step 6.
6. **Get Monitors by Internet Service**: Retrieve information regarding the monitor on the Internet service.

    Select the <Action> where the `name` is `enable`. Use the `href` to enable the monitor in step 7.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
7. **Action Monitors Enable**: Enable the monitor on the Internet service in an environment.

    Select the <Task> in the response with an <Operation> value of `Enable Internet Service Monitor`. Use the `href` to poll the task in step 8.
8. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.10 Internet Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.10.16 Disable a Monitor

Disable a ping, HTTP, or ECV monitor that is enabled.

Note: In step 6, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the monitor is disabled.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

    Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
    - Select the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port,
    - Select the <Monitor>. Use the `href` to disable the Internet service monitor in step 6.
6. **Get Monitors by Internet Service**: Retrieve information regarding the monitor on the Internet service.

    Select the <Action> where the `name` is `disable`. Use the `href` to disable the monitor in step 7.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess`. If set, stop the procedure because the action is not permitted.
7. **Action Monitors Disable**: Disable the monitor on the Internet service in an environment.

    Select the <Task> in the response with an <Operation> value of `EDisable Internet Service Monitor`. Use the `href` to poll the task in step 8.
8. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.11 Node Services

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Node services associate an Internet service to a specific IP address and, therefore, to a specific server.

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6.11.1 Create a Node Service on an Internet Service

Create a node service on an Internet service in an environment.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.
   a.
      - Under the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>,
      - Under the <Host> with the desired <Name>,
      - Select the <IpAddress> where the `name` is the desired IP address. Use the <IpAddress … >, with attributes, to create the appropriate body in step 6.

   b. Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service on which to create the node service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Under the <InternetService> where the <Protocol> and <Port> matches the desired protocol and port;
   - Select the <Action> where the `name` is `createNodeService`. Use the `href` to create the node service in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
6. **Action Node Services Create Internet Service**: Create the appropriate body for the call and submit to create the node service on an Internet service in an environment.

Return to *6.11 Node Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.11.2 Create a Node Service on a Backup Internet Service

Create a node service on a backup Internet service in an environment.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `backupInternetService; type=collection`. Use the `href` to retrieve the backup Internet services for the environment in step 4.
4. **Get Backup Internet Services**: Retrieve information regarding backup Internet services for that environment.

   Select the <BackupInternetService> where <Protocol> matches the protocol used by the Internet service that is backed up by the backup Internet service on which to create the node service. Use the `href` to retrieve that backup Internet service in step 5.
5. **Get Backup Internet Services by ID**: Retrieve information regarding the backup Internet service.

   Select the <Action> where the `name` is `createNodeService`. Use the `href` to create the node service in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
6. **Action Node Services Create Backup Internet Service**: Create the appropriate body for the call and submit to create the node service on a backup Internet service in an environment.

Return to *6.11 Node Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.11.3 Edit a Node Service

Modify a node service in an environment. The following may be changed on a node service:

- Name
- Node description
- Enable or disable traffic to node services

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

   Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
   - Under the <InternetService> with the desired <Protocol> and <Port>,
   - Under the <NodeService> where the `name` and <IpAddress> matches the desired node,
   - Select the <Action> where the `name` is `edit`. Use the `href` to modify the node service in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
6. **Action Node Services Edit**: Create the appropriate body for the call and submit to modify the node service in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Node Service`. Use the `href` to poll the task in step 7.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.11 Node Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.11.4 Delete a Node Service

Remove a node service from an environment

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `publicIp; type=collection`. Use the `href` to retrieve the public IPs for the environment in step 4.
4. **Get Public IPs**: Retrieve information regarding public IP addresses in that environment.

    Select the <PublicIp> where the `name` is the IP address of the public IP address used by the desired Internet service. Use the `href` to retrieve that public IP in step 5.
5. **Get Public IPs by ID**: Retrieve information regarding the public IP.
    - Under the <InternetService> with the desired <Protocol> and <Port>,
    - Under the <NodeService> where the `name` and <IpAddress> matches the desired node
    - Select the <Action> where the `name` is `remove`. Use the `href` to remove the node service in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
6. **Action Node Services Remove**: Remove the node service from an environment.

    Select the <Task> in the response with an <Operation> value of `Remove Node Service`. Use the `href` to poll the task in step 7.
7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.12 Security Services

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6.12.8 End Firewall Logging 183

Advance to *6.13 Trusted Network Groups*.

Security services permit retrieving and modifying firewall rules on logging.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.1 Retrieve Firewall Rules

Retrieve the firewall rules in an environment. The firewall rules may be filtered when requested to limit the rules to a subset of all rules.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `firewallAcl; type=collection`. Use the `href` to retrieve the firewall rules for the environment in step 4.
4. **Get Firewall Rules**: Retrieve information regarding firewall rules in an environment.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.2 Create a Custom Firewall Rule

Create a custom firewall rule in the environment. Internet service firewall rules are automatically created when node services are added to an Internet service and may not be created through the API.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   a. Select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 4.

   b. Select the <Action> with the `name` of `createFirewallAcl`. Use the `href` to create the firewall rules for the environment in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Network Hosts**: Retrieve information regarding the network hosts in that environment.

   a. To use a network as a source or destination, select the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>. Use the <Network … >, with attributes, to create the appropriate body in step 5.

   b. To use an IP address as a source or destination,

      - Under the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>,
      - Under the <Host> with the desired <Name>,
      - Select the <IpAddress> where the `name` is the desired IP address. Use the <IpAddress … >, with attributes, to create the appropriate body in step 5.

5. **Action Firewall Rules Create:** Create the appropriate body for the call and submit to create the custom firewall rule in an environment.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.3 Edit a Custom Firewall Rule

To modify a custom firewall rule, remove the firewall rule as described in *6.12.4 Delete a Custom Firewall Rule* and then create a new custom firewall rule as described in *6.12.2 Create a Custom Firewall Rule*. Internet service firewall rules are automatically created when node services are added to an Internet service and may not be modified.

Return to *6.12 Security Services*.

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6.12.4 Delete a Custom Firewall Rule

Remove a custom firewall rule from the environment. Internet service firewall rules are automatically created when node services are added to an Internet service and may not be removed through the API.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `firewallAcl; type=collection`. Use the `href` to retrieve the firewall rules for the environment in step 4.
4. **Get Firewall Rules**: Retrieve information regarding firewall rules in that environment.
   - Under the <FirewallAcl> with the desired <PortType>, <Protocol>, <Source>, and <Destination>
   - Select the <Action> where the `name` is `remove`. Use the `href` to remove the firewall rule in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Firewall Rules Remove**: Remove the custom firewall rule from an environment.

   Select the <Task> in the response with an <Operation> value of `Delete Firewall Rule`. Use the `href` to poll the task in step 6.
6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.5 Retrieve Firewall Log Setting

Retrieve the current firewall settings. Firewall logs may be sent to any reachable IP address.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `firewallLog`. Use the `href` to retrieve the firewall log setting for the environment in step 4.

4. **Get Firewall Logs**: Retrieve the firewall log setting.

   - If the <FirewallLog> has an <ExternalIpAddress>, end the procedure.
   - If the <FirewallLog> has an <IpAddress>, use the `href` to retrieve information regarding the IP address in step 5.

5. **Get IP Addresses by ID**: Retrieve information regarding the firewall log settings in an environment.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.6 Begin Firewall Logging

Begin firewall logging on a specified host IP address. Firewall logs may be sent to any reachable IP address.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   a. If an internal host will receive the firewall log, select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 4.
   b. Select the <Action> with the `name` of `createFirewallLog`. Use the `href` to create the destination address for the firewall log for the environment in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Network Hosts**: If an internal host will receive the firewall log, retrieve the network hosts in that environment.

   - Under the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>,
   - Under the <Host> with the desired <Name>,
   - Select the <IpAddress> where the `name` is the desired IP address. Use the <IpAddress … >, with attributes, to create the appropriate body in step 5.

5. **Action Firewall Logs Create**: Create the appropriate body for the call and submit to create the destination address for the firewall log and begin firewall logging in an environment.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.7 Edit Firewall Logging

Change the specified host IP address for firewall logging. Firewall logs may be sent to any reachable IP address.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.
   a. If an internal host will receive the firewall log, select the <Link> with the `type` of `networkHostSummary`. Use the `href` to retrieve the network hosts for the environment in step 5.
   b. Select the <Link> with the `type` of `firewallLog`. Use the `href` to retrieve the firewall log setting for the environment in step 4.
4. **Get Firewall Logs**: Retrieve the firewall log setting.

   Select the <Action> with the `name` of `edit`. Use the `href` to modify the destination address for the firewall log for the environment in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Network Hosts**: If an internal host will receive the firewall log, retrieve the network hosts in that environment.
   - Under the <Network> with the `name` of the desired address and prefix length and which contains the desired <NetworkType>,
   - Under the <Host> with the desired <Name>,
   - Select the <IpAddress> where the `name` is the desired IP address. Use the <IpAddress … >, with attributes, to create the appropriate body in step 6.

6. **Action Firewall Logs Edit**: Create the appropriate body for the call and submit to modify the destination address for the firewall log in an environment.

   Select the <Task> in the response with an <Operation> value of `Configure Firewall Log Host`. Use the `href` to poll the task in step 7.

7. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.12.8 End Firewall Logging

End firewall logging.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `firewallLog`. Use the `href` to retrieve the firewall log setting for the environment in step 4.

4. **Get Firewall Logs**: Retrieve the firewall log setting.

   Select the <Action> with the `name` of `remove`. Use the `href` to remove the destination address for the firewall log for the environment in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Firewall Logs Remove**: Remove the destination address for the firewall log and end firewall logging in an environment.

   Select the <Task> in the response with an <Operation> value of `Remove Firewall Log`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.12 Security Services*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.13 Trusted Network Groups

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Advance to *6.14 Settings*.

Retrieve and modify trusted network groups.

Return to *6 Application Programming Interface Programmer's Guide*.

6.13.1 Retrieve Trusted Network Groups

Retrieve all the trusted network groups in an environment.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

   Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

   Select the <Link> with the `type` of `trustedNetworkGroup; type=collection`. Use the `href` to retrieve the trusted network groups for the environment in step 4.
4. **Get Trusted Network Groups**: Retrieve information regarding trusted network groups in an environment.

Return to *6.13 Trusted Network Groups*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.13.2 Create a Trusted Network Group

Create a trusted network group in the environment.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Action> with the `name` of `createTrustedNetworkGroup`. Use the `href` to create the trusted network group for the environment in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Trusted Network Groups Create**: Create the appropriate body for the call and submit to create the trusted network group in an environment.

Return to *6.13 Trusted Network Groups*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.13.3 Edit a Trusted Network Group

Modify a trusted network group in the environment.

Note: If any <IpAddress> is valued on the trusted network group and not present in the call, that host's IP address is removed from the trusted network group. Similarly, if any <Network> is valued on the trusted network group and not present in the call, that network is removed from the trusted network group.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.
2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.
3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `trustedNetworkGroup; type=collection`. Use the `href` to retrieve the trusted network groups for the environment in step 4.

4. **Get Trusted Network Groups**: Retrieve information regarding trusted network groups in that environment.

    - Select the <TrustedNetworkGroup> where the `name` is the desired trusted network group, or
    - Select the <TrustedNetworkGroup> where under the <Hosts> is the <IpAddress>of the desired host or hosts and under <Networks> is a <Network> where <Address> is the desired network address and <Size> is the desired network prefix length,
    - Select the <Action> with the `name` of `edit`. Use the `href` to modify the trusted network group in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Trusted Network Groups Edit**: Create the appropriate body for the call and submit to modify the trusted network group in an environment.

    Select the <Task> in the response with an <Operation> value of `Configure Trusted Network Group`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

Return to *6.13 Trusted Network Groups*.

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6.13.4 Delete a Trusted Network Group

Remove a trusted network group from the environment.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

    - Under <Organization> for the desired organization,
    - Select the <Environment> for the desired environment. Use the `href` to retrieve that environment in step 2.

2. **Get Environments by ID**: Retrieve information regarding the environment.

    Select the <Link> with the `type` of `environmentNetworkSummary`. Use the `href` to retrieve the network summary for the environment in step 3.

3. **Get Network Summary**: Retrieve information regarding the network summary.

    Select the <Link> with the `type` of `trustedNetworkGroup; type=collection`. Use the `href` to retrieve the trusted network groups for the environment in step 4.

4. **Get Trusted Network Groups**: Retrieve information regarding trusted network groups in that environment.

   - Select the <TrustedNetworkGroup> where the `name` is the desired trusted network group, or
   - Select the <TrustedNetworkGroup> where under the <Hosts> is the <IpAddress>of the desired host or hosts and under <Networks> is a <Network> where <Address> is the desired network address and <Size> is the desired network prefix length,
   - Select the <Action> with the `name` of `remove`. Use the `href` to remove the trusted network group in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Trusted Network Groups Remove**: Remove the trusted network group from an environment.

   Select the <Task> in the response with an <Operation> value of `Delete Trusted Network Group`. Use the `href` to poll the task in step 6.

6. **Get Tasks by ID**: Poll the task until the <Status> is no longer `Queued` or `Running`. Review the <Status> for `Success`, `Failed`, or `Error`.

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6.14 Settings

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Settings calls enable an API user to modify their credentials and administrative users to modify organizational settings.

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6.14.1 Retrieve a Summary of Administrative Settings

Retrieve a summary of the administrative settings for an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative setting for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.2 Retrieve Security Questions

Retrieve the available security questions defined by the Enterprise Cloud. As part of the user credentials, the user must provide answers to six security questions: three defined by the Enterprise Cloud and three defined by the user.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.

    Select the <Link> with a `type` of `admin.securityQuestion; type=collection`. Use the `href` to retrieve the security questions in step 4.

4. **Get Users Security Questions**: Retrieve the security questions for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.3 Edit User Credentials

Modify the security credentials of a user in an organization.

Note: Only the user may change their credentials; the authorization on this call must match the user edited.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
   a. Select the <Link> with a `type` of `admin.securityQuestion; type=collection`. Use the `href` to retrieve the security questions in step 4.
   b.
      - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
      - Select the <Action> with a `name` of `edit` and a `type` of `credentials`. Use the `href` to modify the user's credentials in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Users Security Questions**: Retrieve the security questions for an organization.

   Select the <Question> where the content is the desired question. Use the intact content of <Question> to create the appropriate body in step 5.
5. **Action Users Edit Credentials**: Create the appropriate body for the call and submit to modify the credentials of a user in an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.4 Enable Email Notification

Enable email notification of specific events for a user in an organization.

Note: Only the user may enable their email notification; the authorization on this call must match the user edited.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if email notification is enabled.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
   - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
   - Select the <Action> with a `name` of `enableAlertNotifications`. Use the `href` to enable the user's email notification in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Users Enable Alerts**: Enable email notification for the user in an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.5 Disable Email Notification

Enable email notification of specific events for a user in an organization.

Note: Only the user may disable their email notification; the authorization on this call must match the user edited.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if email notification is disabled.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.

3. **Get Users**: Retrieve information regarding all users for an organization.

   - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
   - Select the <Action> with a `name` of `disableAlertNotifications`. Use the `href` to disable the user's email notification in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Users Disable Alerts**: Disable email notification for the user in an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.6 Enable Support Access

Enable customer support access to environments for an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if customer support access is enabled.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   - Under <SupportAccess>,
   - Select the <Action> with a `name` of `enableSupportAccess`. Use the `href` to enable the organization's customer support access in step 3.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

3. **Action Administrative Organizations Enable Support Access**: Enable customer support access for the organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.7 Disable Support Access

Disable customer support access to environments for an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if customer support access is disabled.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <SupportAccess>,
    - Select the <Action> with a `name` of `disableSupportAccess`. Use the `href` to disable the organization's customer support access in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Administrative Organizations Disable Support Access**: Disable customer support access for the organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.8 Retrieve API Authentication Levels

Retrieve the API authentication levels. An organization may limit the authentication levels by which API users are permitted to access the Application Programming Interface.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin. authenticationLevels`. Use the `href` to retrieve the authentication levels for that organization in step 3.
3. **Get Administrative Organizations Authentication Levels**: Retrieve the authentication levels for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.9 Edit API Authentication Levels

Modify the API authentication levels. An organization may modify the authentication levels by which API users are permitted to access the Application Programming Interface.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.authenticationLevels`. Use the `href` to retrieve the authentication levels for the organization in step 3.
3. **Get Administrative Organizations Authentication Levels**: Retrieve the authentication levels for an organization.

   Select the <Action> with a `name` of `edit`. Use the `href` to modify the authentication levels for the organization in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Administrative Organizations Edit Authentication Levels**: Create the appropriate body for the call and submit to modify the authentication levels for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.10 Retrieve Password Complexity Rules

Retrieve the password complexity rules. An organization may establish rules regarding password complexity.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select <PasswordComplexityRules>. Use the `href` to retrieve the password complexity rules for the organization in step 3.
3. **Get Administrative Organizations Password Complexity Rules**: Retrieve the password complexity rules for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.11 Edit Password Complexity Rules

Modify the password complexity rules. An organization may establish rules regarding password complexity.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <PasswordComplexityRules>,
    - Select the <Action> with a `name` of `edit`. Use the `href` to modify the password complexity rules for the organization in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Administrative Organizations Edit Password Complexity Rules**: Create the appropriate body for the call and submit to modify the password complexity rules for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.12 Retrieve the Login Banner

Retrieve the login banner. An organization may create a banner displayed when users log in.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select <LoginBanner>. Use the `href` to retrieve the login banner for the organization in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Get Administrative Organizations Login Banner**: Retrieve the login banner for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.13 Edit the Login Banner

Modify the login banner. An organization may create a banner displayed when users log in.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if customer support access is disabled.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <LoginBanner>,
    - Select the <Action> with a `name` of `edit`. Use the `href` to modify the login banner for the organization in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Administrative Organizations Edit Login Banner**: Create the appropriate body for the call and submit to modify the login banner for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.14 Retrieve Alert Rule Templatess

Retrieve the alert rule templates available to an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <AlertNotification>,
    - Select the <Link> with a `type` of `alertRuleTemplate; type=collection`. Use the `href` to retrieve the alert rule templates available to the organization in step 3.
3. **Get Alerts Rule Templates**: Retrieve the alert rule templates available to an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.15 Retrieve Alert Rules

Retrieve the current alert rules settings for an organization. This is the same object as that incorporated into the administrative organization object.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select <AlertRules>. Use the `href` to retrieve the alert rules settings for the organization in step 3.
3. **Get Alerts Rules**: Retrieve the alert rules settings for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.16 Create an Alert Rule

Create an alert rule from an alert rule template for an organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the rule for that template already exists for the organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <AlertNotifications>,
    - Select the <Link> with a `type` of `alertRuleTemplate; type=collection`. Use the `href` to retrieve the alert rule templates available to the organization in step 3.
3. **Get Alerts Rule Templates**: Retrieve the alert rule templates available to an organization.
    - Under <AlertRuleTemplate> where the `name` is the desired alert template,
    - Select the <Action> with a `name` of `createAlertRule`. Use the `href` to create the alert rule for an organization in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Alerts Create Rule**: Create the appropriate body for the call and submit to create the alert rule for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.17 Edit an Alert Rule

Edit the recipient list on an existing alert rule for an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   - Under <AlertNotifications>,
   - Under the <AlertRule> with a `name` of the alert rule for which a new recipient list is desired,
   - Select the <Action> with a `name` of `edit`. Use the `href` to create the alert rule for an organization in step 3.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Alerts Edit Rule**: Create the appropriate body for the call and submit to modify therecipient list on an alert rule for an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.14.18 Delete an Alert Rule

Delete an alert rule from an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   - Under <AlertNotifications>,
   - Under the <AlertRule> with a `name` of the alert rule for which a new recipient list is desired,
   - Select the <Action> with a `name` of `remove`. Use the `href` to delete the alert rule from an organization in step 3.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

3. **Action Alerts Remove Rule**: Delete the alert rule from an organization.

Return to *6.14 Settings*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15 Manage Users

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Advance to *6.16 Manage Roles*.

Manage Users calls enable the API to add, edit, and remove users and to manipulate account features.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.1 Retrieve Users in an Organization

Retrieve a list of all users in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.
3. **Get Users**: Retrieve information regarding all users in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.2 Retrieve a Specified User in an Organization

Retrieve information regarding a specified user, including assigned roles, in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in step 3.
3. **Get Users**: Retrieve information regarding all users in an organization.

    Select the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user. Use the `href` to retrieve the user in step 4.
4. **Get Users by ID**: Retrieve information regarding a specified user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.3 Retrieve API Keys for a Specified User in an Organization

Retrieve information regarding the API key pairs assigned to a specified user in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all the users in the organization.
    - Under <User> for the desired user,
    - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve all the key pairs for the API user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.4 Invite a User

Invite a user, either from a company contact or a new user to an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    a.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

    b.
    - If the user is not to be an administrator, under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `environment; type=collection` . Use the `href` to retrieve all the environments in the organization in step 3.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    a. Select the <Link> with the `type` of `role; type=collection`. Use the `href` to retrieve information regarding the roles in an organization in step 4.
    b. If a contact is to be the source, select the <Link> with the `type` of `contact; type=collection`. Use the `href` to retrieve the contacts for the organization in step 5.
    c. Select the <Action> with the `name` of `inviteUser`. Use the `href` to invite the user in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

3. **Get Environments**: If the user is not to be an administrator, retrieve information regarding all the environments in the organization.

   Select the <Environment> where the `name` is the desired environment. Use the <Environment … >, with attributes, to create the appropriate body in step 6.

   Note: More than one <Environment> may be selected; repeat the selection as desired.

4. **Get Roles**: Retrieve information regarding the roles in that organization.

   - If an organization role is needed, select the <Role> with a subordinate <RoleType>Organization</RoleType>where the `name` is the desired role. Use the `href` to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Organization</RoleType> may be selected.

   - If an environment role is needed, select the <Role> with a subordinate <RoleType>Environment</RoleType> where the `name` is the desired role. Use the <Role … >, with attributes, to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Environment</RoleType> may be selected for each environment and may be different for each environment.

5. **Get Contacts**: If a contact is to be the source, retrieve information regarding the contacts in that organization.

   Select the <Contact> where the `name` is the email address of the desired contact or the subordinate <FirstName> and <LastName>are that of the desired contact. Use the <Contact … >, with attributes, to create the appropriate body in step 6.

6. **Action Users Invite**: Create the appropriate body for the call and submit to invite a user to an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.5 Create a User

Create a user, either from a company contact or a new user to an organization. When a user is created, they need not complete the registration process that an invited user must complete.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   a.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

   b.
   - If the user is not to be an administrator, under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `environment; type=collection` . Use the `href` to retrieve all the environments in the organization in step 3.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   a. Select the <Link> with the `type` of `role; type=collection`. Use the `href` to retrieve information regarding the roles in an organization in step 4.
   b. If a contact is to be the source, select the <Link> with the `type` of `contact; type=collection`. Use the `href` to retrieve the contacts for the organization in step 5.
   c. Select the <Action> with the `name` of `createUser`. Use the `href` to create the user in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

3. **Get Environments**: If the user is not to be an administrator, retrieve information regarding all the environments in the organization.

   Select the <Environment> where the `name` is the desired environment. Use the <Environment … >, with attributes, to create the appropriate body in step 6.

   Note: More than one <Environment> may be selected; repeat the selection as desired.

4. **Get Roles**: Retrieve information regarding the roles in that organization.

   - If an organization role is needed, select the <Role> with a subordinate <RoleType>Organization</RoleType>where the `name` is the desired role. Use the `href` to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Organization</RoleType> may be selected.

   - If an environment role is needed, select the <Role> with a subordinate <RoleType>Environment</RoleType> where the `name` is the desired role. Use the <Role … >, with attributes, to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Environment</RoleType> may be selected for each environment and may be different for each environment.

5. **Get Contacts**: If a contact is to be the source, retrieve information regarding the contacts in that organization.

   Select the <Contact> where the `name` is the email address of the desired contact or the subordinate <FirstName> and <LastName>are that of the desired contact. Use the <Contact … >, with attributes, to create the appropriate body in step 6.

6. **Action Users Create**: Create the appropriate body for the call and submit to create a user in an organization.

Return to *6.15 Manage Users*.

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6.15.6 Create an API User

Create a new API user in an organization. When an API user is created, they need not complete the registration process that an invited user must complete.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   a.
      - Under <Organization> for the desired organization,
      - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

   b.
      - If the user is not to be an administrator, under <Organization> for the desired organization,
      - Select the <Link> with a `type` of `environment; type=collection` . Use the `href` to retrieve all the environments in the organization in step 3.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   a. Select the <Link> with the `type` of `role; type=collection`. Use the `href` to retrieve information regarding the roles in an organization in step 4.
   b. Select the <Action> with the `name` of `createApiUser`. Use the `href` to invite the user in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Get Environments**: If the user is not to be an administrator, retrieve information regarding all the environments in the organization.

   Select the <Environment> where the `name` is the desired environment. Use the <Environment … >, with attributes, to create the appropriate body in step 5.

   Note: More than one <Environment> may be selected; repeat the selection as desired.

4. **Get Roles**: Retrieve information regarding the roles in that organization.

   - If an organization role is needed, select the <Role> with a subordinate <RoleType>Organization</RoleType>where the `name` is the desired role. Use the `href` to create the appropriate body in step 5.

   Note: Only one <Role> with a subordinate <RoleType>Organization</RoleType> may be selected.

   - If an environment role is needed, select the <Role> with a subordinate <RoleType>Environment</RoleType> where the `name` is the desired role. Use the <Role … >, with attributes, to create the appropriate body in step 5.

   Note: Only one <Role> with a subordinate <RoleType>Environment</RoleType> may be selected for each environment and may be different for each environment.

5. **Action Users Create API User**: Create the appropriate body for the call and submit to invite a user to an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.7 Create Keys for an API User

Create an additional key pair for an API user in an organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the user is not an API user.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.

3. **Get Users**: Retrieve information regarding all the users in the organization.

   - Under <User> for the desired user,
   - Select the <Action> with a `type` of `admin.createApiKey`. Use the `href` to create the keys in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action API Keys Create**: Create the appropriate body for the call and submit to create a key pair for an API user in an organization.

   In the <ApiKey> of the response, use the `href` to retrieve the key pair in step 5.

5. **Get API Keys by ID**: Retrieve the key pair for the API user in an organization.

   Save the value of the <PrivateKey>.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.8 Edit a User

Modify the first name (given name), last name (family name), assigned roles, and multifactor authentication parameters of a user in an organization.

This procedure can modify the roles assigned to a user in the same manner as *6.15.9 Edit a User's Roles* and can modify the multifactor authentication parameters, if multifactor authentication is enabled, for a user in the same manner as *6.15.14 Enable Multifactor Authentication*.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   a.
      - Under <Organization> for the desired organization,
      - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.

   b.
      - If the user is not to be an administrator and roles will change, under <Organization> for the desired organization,
      - Select the <Link> with a `type` of `environment; type=collection` . Use the `href` to retrieve all the environments in the organization in step 4.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   a. Select the <Link> with the `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in the organization in step 3.
   b. If the roles will change, select the <Link> with the `type` of `role; type=collection`. Use the `href` to retrieve information regarding the roles in an organization in step 5.
3. **Get Users**: Retrieve information regarding all users in an organization.
   - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
   - Select the <Action> with a `name` of `edit`. Use the `href` to modify the user in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Get Environments**: If the user is not to be an administrator and the roles will change, retrieve information regarding all the environments in the organization.

   Select the <Environment> where the `name` is the desired environment. Use the <Environment … >, with attributes, to create the appropriate body in step 6.

   Note: More than one <Environment> may be selected; repeat the selection as desired.

5. **Get Roles**: If the roles will change, retrieve information regarding the roles in that organization.

   - If an organization role is needed, select the <Role> with a subordinate <RoleType>Organization</RoleType>where the `name` is the desired role. Use the `href` to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Organization</RoleType> may be selected.

   - If an environment role is needed, select the <Role> with a subordinate <RoleType>Environment</RoleType> where the `name` is the desired role. Use the <Role … >, with attributes, to create the appropriate body in step 6.

   Note: Only one <Role> with a subordinate <RoleType>Environment</RoleType> may be selected for each environment and may be different for each environment.

6. **Action Users Edit**: Create the appropriate body for the call and submit to modify the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.9 Edit a User's Roles

Modify the roles assigned to a user in an organization.

This procedure can modify the roles assigned to a user in the same manner as *6.15.8 Edit a User*.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.

   a.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.

   b.
   - If the user is not to be an administrator, under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `environment; type=collection` . Use the `href` to retrieve all the environments in the organization in step 4.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    a. Select the <Link> with the `type` of `admin.user; type=collection`. Use the `href` to retrieve the users in the organization in step 3.
    b. Select the <Link> with the `type` of `role; type=collection`. Use the `href` to retrieve information regarding the roles in an organization in step 5.
3. **Get Users**: Retrieve information regarding all users in an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `edit`. Use the `href` to modify the user in step 6.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Get Environments**: If the user is not to be an administrator, retrieve information regarding all the environments in the organization.

    Select the <Environment> where the `name` is the desired environment. Use the <Environment … >, with attributes, to create the appropriate body in step 6.

    Note: More than one <Environment> may be selected; repeat the selection as desired.
5. **Get Roles**: Retrieve information regarding the roles in that organization.
    - If an organization role is needed, select the <Role> with a subordinate <RoleType>Organization</RoleType>where the `name` is the desired role. Use the `href` to create the appropriate body in step 6.

    Note: Only one <Role> with a subordinate <RoleType>Organization</RoleType> may be selected.
    - If an environment role is needed, select the <Role> with a subordinate <RoleType>Environment</RoleType> where the `name` is the desired role. Use the <Role … >, with attributes, to create the appropriate body in step 6.

    Note: Only one <Role> with a subordinate <RoleType>Environment</RoleType> may be selected for each environment and may be different for each environment.
6. **Action Roles Edit User**: Create the appropriate body for the call and submit to modify the roles for the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.10 Deactivate a User

Disable a user.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user is inactive.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `disableUserAccount`. Use the `href` to disable the user in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Users Disable Account**: Disable the user in an organization.

Return to *6.15 Manage Users*.

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6.15.11 Activate a User

Enable a user.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user is active.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `enableUserAccount`. Use the `href` to enable the user in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Users Enable Account**: Enable the user in an organization.

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Return to *6 Application Programming Interface Programmer's Guide*.

6.15.12 Reset a User Account

Reset a user. Resetting a user sets the user's account back to the initial state and sends a new invitation email. The user must then perform the registration process to establish their account again.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user is inactive.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
   - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
   - Select the <Action> with a `name` of `resetUserAccount`. Use the `href` to reset the user in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Users Reset Account**: Reset the account of the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.13 Unlock a User

Unlock a user whose account has been locked due to too many login attempts.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user is inactive.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `unlockUserAccount`. Use the `href` to unlock the user in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Users Unlock Account**: Unlock the account of the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.14 Enable Multifactor Authentication

Enable multifactor authentication for a user.

This procedure can modify the multifactor authentication parameters for a user in the same manner as *6.15.8 Edit a User*.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user has multifactor authentication enabled or if no multifactor authentication licenses remain in the organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.

3. **Get Users**: Retrieve information regarding all users for an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `enableMultifactor`. Use the `href` to enable the multifactor authentication in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Users Unlock Account**: Create the appropriate body for the call and submit to enable multifactor authentication for the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.15 Disable Multifactor Authentication

Disable multifactor authentication for a user.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the selected user has multifactor authentication disabled.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
    - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
    - Select the <Action> with a `name` of `disableMultifactor`. Use the `href` to disable the multifactor authentication in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Users Unlock Account**: Disable multifactor authentication for the user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.16 Remove a User

Remove a user from an organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.user; type=collection`. Use the `href` to retrieve all the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all users for an organization.
   - Under the <User> where the `name` is the email address of the desired user or the subordinate <FirstName> and <LastName>are that of the desired user,
   - Select the <Action> with a `name` of `remove`. Use the `href` to remove the user in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Users Remove**: Remove the user from an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.17 Retrieve an API Key Pair for a Specified User in an Organization

Retrieve information regarding a specified API key pair assigned to a specified API user in an organization. This is the only procedure by which the private key may be retrieved.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.

3. **Get Users**: Retrieve information regarding all the users in the organization.
    - Under <User> for the desired user,
    - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve information regarding all the keys for the user.

    Select the <ApiKey> with a `type` of `admin.apiKey` and a `name` of the desire key. Use the `href` to retrieve the key pair in step 5.
5. **Get API Keys by ID**: Retrieve the key pair for the API user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.18 Edit an API Key

Modify the name of an API key pair for an API user in an organization.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all the users in the organization.
    - Under <User> for the desired user,
    - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve information regarding all the keys for the user.
    - Under <ApiKey> for the desired key,
    - Select the <Action> with a `name` of `edit`. Use the `href` to modify the key in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action API Keys Edit**: Create the appropriate body for the call and submit to modify the key for the API user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.19 Activate an API Key

Activate an API key pair for an API user in an organization.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the <Status> of the key is `Active`.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all the users in the organization.
   - Under <User> for the desired user,
   - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve information regarding all the keys for the user.
   - Under <ApiKey> for the desired key,
   - Select the <Action> with a `name` of `activate`. Use the `href` to activate the key in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action API Keys Activate**: Activate the key for the API user in an organization.

Return to *6.15 Manage Users*.

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6.15.20 Deactivate an API Key

Deactivate an API key pair for an API user in an organization.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the <Status> of the key is `Inactive`.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all the users in the organization.
    - Under <User> for the desired user,
    - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve information regarding all the keys for the user.
    - Under <ApiKey> for the desired key,
    - Select the <Action> with a `name` of `deactivate`. Use the `href` to deactivate the key in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action API Keys Deactivate**: Deactivate the key for the API user in an organization.

Return to *6.15 Manage Users*.

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6.15.21 Delete an API Key

Remove an API key pair from an API user in an organization.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.

3. **Get Users**: Retrieve information regarding all the users in the organization.
    - Under <User> for the desired user,
    - Select the <Link> with a `type` of `admin.apiKey; type=collection`. Use the `href` to retrieve the keys in step 4.
4. **Get API Keys**: Retrieve information regarding all the keys for the user.
    - Under <ApiKey> for the desired key,
    - Select the <Action> with a `name` of `remove`. Use the `href` to remove the key in step 5.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action API Keys Remove**: Remove the key from the API user in an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.15.22 Retrieve the Audit Log

Retrieve the audit log. The audit log contains a history of changes made to user accounts in the organization. The call to retrieve the audit log may include optional query parameters to limit or sort the response.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.auditLog`. Use the `href` to retrieve the audit log for an organization in step 3.
3. **Get Audit Logs**: Attach query parameters, if desired, and retrieve the audit log for an organization.

Return to *6.15 Manage Users*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16 Manage Roles

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Advance to *6.17 Bandwidth*.

Manage Roles calls enable the API to add, edit, and remove roles.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.1 Retrieve Roles in an Organization

Retrieve all the roles defined in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.
3. **Get Roles**: Retrieve the roles for an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.2 Retrieve Roles by User

Retrieve the roles for a user in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with the `type` of `user; type=collection`. Use the `href` to retrieve information regarding the users in an organization in step 3.
3. **Get Users**: Retrieve information regarding all the users in the organization.
   - Under <User> for the desired user,
   - Select the <Link> with a `type` of `admin.userRole`. Use the `href` to retrieve the roles in step 4.
4. **Get Roles by User**: Retrieve the roles for the user in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.3 Retrieve a Role by ID

Retrieve the specified role in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.
3. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role. Use the `href` to retrieve the role in step 4.
4. **Get Roles by ID**: Retrieve the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.4 Create a New Role

You may create a new custom role for your organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   - Select the <Link> with a `type` of `admin.businessOperation; type=collection`. Use the `href` to retrieve the business operations in step 3.
   - Select the <Action> with a `name` of `createRole`. Use the `href` to create the roles for an organization in step 4.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

3. **Get Business Operations**: Retrieve the business operations.

   Select the <BusinessOperation … > with the `name` of the desired business operation and which contains the desired <BusinessOperationType> of the level desired for the role. Use the <BusinessOperation … >, with attributes, to create the appropriate body in step 4.

4. **Action Roles Create**: Create the appropriate body for the call and submit to create the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.5 Edit a Role

You may modify a custom role for your organization.

Note: In step 5, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   - Select the <Link> with a `type` of `admin.businessOperation; type=collection`. Use the `href` to retrieve the business operations in step 3.
   - Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 4.
3. **Get Business Operations**: Retrieve the business operations.

   Select the <BusinessOperation … > with the `name` of the desired business operation and which contains the desired <BusinessOperationType> of the level desired for the role. Use the <BusinessOperation … >, with attributes, to create the appropriate body in step 6.

4. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role. Use the `href` to retrieve the role in step 5.

5. **Get Roles by ID**: Retrieve the desired role.

   Select the <Action> with a `name` of `edit`. Use the `href` to modify the role for an organization in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

6. **Action Roles Edit**: Create the appropriate body for the call and submit to modify the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.6 Copy a Role

You may copy a role. A copy retrieves an existing role, offers the opportunity to modify the associated and business operations, and creates a new role with the changes.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
   - Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.
   - If any additional business operations are desired, select the <Link> with a `type` of `admin.businessOperation; type=collection`. Use the `href` to retrieve the business operations in step 5.
3. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role to copy. Use the `href` to retrieve the role in step 4.
4. **Get Roles by ID**: Retrieve the desired role.

   Select the <Action> with a `name` of `create`. Use the `href` to create the role for an organization in step 6.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Get Business Operations**: If any additional business operations are desired, retrieve the business operations.

   Select the <BusinessOperation … > with the `name` of the desired business operation and which contains the desired <BusinessOperationType> of the level desired for the role. Use the <BusinessOperation … >, with attributes, to create the appropriate body in step 6.
6. **Action Roles Create**: Create the appropriate body for the call and submit to create the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.7 Activate a Role

You may activate a role that is deactivated.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the role is active.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.
3. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role to copy. Use the `href` to retrieve the role in step 4.
4. **Get Roles by ID**: Retrieve the desired role.

   Select the <Action> with a `name` of `enableRole`. Use the `href` to activate the role for an organization in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
5. **Action Roles Enable**: Activate the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.8 Deactivate a Role

You may deactivate a role that is activated.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if any users are assigned to the role or if the role is inactive.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.

3. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role to copy. Use the `href` to retrieve the role in step 4.

4. **Get Roles by ID**: Retrieve the desired role.

   Select the <Action> with a `name` of `disableRole`. Use the `href` to deactivate the role for an organization in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Roles Disable**: Deactivate the role in an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.16.9 Delete a Role

You may remove a role.

Note: In step 4, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if any users are assigned to the role.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.role; type=collection`. Use the `href` to retrieve the roles for an organization in step 3.

3. **Get Roles**: Retrieve the roles for an organization.

   Select <RoleReference> with a `name` of the desired role to copy. Use the `href` to retrieve the role in step 4.

4. **Get Roles by ID**: Retrieve the desired role.

   Select the <Action> with a `name` of `remove`. Use the `href` to remove the role for an organization in step 5.

   Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

5. **Action Roles Disable**: Remove the role from an organization.

Return to *6.16 Manage Roles*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.17 Bandwidth

6.17.1 Retrieve Bandwidth Periods 223

6.17.2 Retrieve Bandwidth Usage 223

Advance to *6.18 SSH Keys*.

Bandwidth is a billed resource and monitoring usage helps the organization manage costs.

Return to *6 Application Programming Interface Programmer's Guide*.

6.17.1 Retrieve Bandwidth Periods

Retrieve available bandwidth periods. Bandwidth is presented by billing period. Bandwidth information is retained for twelve months or the life of the contract, whichever is less.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin. bandwidthPeriods`. Use the `href` to retrieve the bandwidth periods for an organization in step 3.
3. **Get Bandwidth Period**: Retrieve the bandwidth periods for an organization.

Return to *6.17 Bandwidth*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.17.2 Retrieve Bandwidth Usage

Retrieve bandwidth usage for a period. Bandwidth is presented by billing period. Bandwidth information is retained for twelve months or the life of the contract, whichever is less.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin. bandwidthPeriods`. Use the `href` to retrieve the bandwidth periods for an organization in step 3.

3. **Get Bandwidth Period**: Retrieve the bandwidth periods for an organization.
    - Under <BandwidthPeriods> for the desired organization,
    - Select the <BandwidthPeriod> with a `name` of the desired billing period. Use the `href` to retrieve the bandwidth usage for that period in step 4.
4. **Get Bandwidth Usage**: Retrieve the bandwidth usage for a period for an organization.

Return to *6.17 Bandwidth*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.18 SSH Keys

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6.18.2 Retrieve a Specified SSH Key 224
6.18.3 Create a New SSH Key 225
6.18.4 Edit a SSH Key 225
6.18.5 Delete a SSH Key 226

Advance to *6.19 VM Catalog*.

SSH keys permit secure access to Linux servers using secure shell (SSH).

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6.18.1 Retrieve All SSH Keys for an Organization

Retrieve all the SSH keys for an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.sshKey; type=collection`. Use the `href` to retrieve those SSH keys in step 3.
3. **Get SSH Keys**: Retrieve information regarding all SSH keys in an organization.

Return to *6.18 SSH Keys*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.18.2 Retrieve a Specified SSH Key

Retrieve information regarding a specific SSH key in an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.
    - Under <SshKeys>,
    - Select the <SshKey> with a `name` of the desired key. Use the `href` to retrieve that key in step 3.
3. **Get SSH Keys**: Retrieve information regarding the specified SSH key in an organization.

Return to *6.18 SSH Keys*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.18.3 Create a New SSH Key

Create a new SSH key for an organization.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the `href` to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Action> with a `name` of `createSshKey`. Use the `href` to create the key in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action SSH Keys Create**: Create the appropriate body for the call and submit to create the SSH key in an organization.

Return to *6.18 SSH Keys*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.18.4 Edit a SSH Key

Modify a SSH key in an organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.sshKey; type=collection`. Use the `href` to retrieve those SSH keys in step 3.
3. **Get SSH Keys**: Retrieve information regarding all SSH keys for an organization.
    - Under <SshKey> with a `name` of the desired key.
    - Select the <Action> with a `name` of `edit`. Use the `href` to modify the SSH key in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action SSH Keys Edit**: Create the appropriate body for the call and submit to modify the SSH key in an organization.

Return to *6.18 SSH Keys*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.18.5 Delete a SSH Key

Remove a SSH key from an organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the SSH key is the default.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.sshKey; type=collection`. Use the `href` to retrieve those SSH keys in step 3.
3. **Get SSH Keys**: Retrieve information regarding all SSH keys for an organization.
    - Under <SshKey> with a `name` of the desired key.
    - Select the <Action> with a `name` of `remove`. Use the `href` to remove the SSH key in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action SSH Keys Remove**: Remove the SSH key from an organization.

Return to *6.18 SSH Keys*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19 VM Catalog

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6.19.2 Retrieve the Catalog for a Location 227
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6.19.5 Retrieve the Catalog Log 229
6.19.6 Add a Catalog Item to an Organization 229
6.19.7 Delete a Catalog Item from an Organization 230
6.19.8 Delete a Catalog Item from a Location 231

Advance to *6.20 Support*.

VM Catalog provides a means to upload complete virtual machines to their location and manage those catalog items. These uploaded virtual machines may be imported into a compute pool as new servers.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.1 Retrieve All Catalogs for an Organization

Retrieve the catalog for a specified organization.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.catalogEntry; type=collection`. Use the `href` to retrieve those catalogs in step 3.
3. **Get Catalog**: Retrieve information regarding all catalogs for an organization.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.2 Retrieve the Catalog for a Location

Retrieve the catalog for a specified location.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Under <Location> for the desired location,
    - Select the <Catalog>. Use the `href` to retrieve that catalog in step 2.
2. **Get Catalog by Location**: Retrieve information regarding a catalog for a location.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.3 Retrieve a Catalog Item Configuration for an Organization

Retrieve the configuration of a catalog item for an organization.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.catalogEntry; type=collection`. Use the `href` to retrieve those catalogs in step 3.
3. **Get Catalog**: Retrieve information regarding all catalogs for an organization.
    - Under <CatalogEntry> for the desired catalog item,
    - Select the <Configuration>. Use the `href` to retrieve the desired environment in step 4.
4. **Get Catalog Configuration**: Retrieve information regarding the configuration of a catalog item in an organization.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.4 Retrieve the Catalog Item Configuration for a Location

Retrieve the catalog item configuration for a specified location.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Under <Location> for the desired location,
    - Select the <Catalog>. Use the href to retrieve that catalog in step 2.
2. **Get Catalog by Location**: Retrieve information regarding a catalog for a location.
    - Under <CatalogEntry> for the desired catalog item,
    - Select the <Configuration>. Use the `href` to retrieve the desired environment in step 3.

3. **Get Catalog Configuration**: Retrieve information regarding the configuration of a catalog item in a location.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.5 Retrieve the Catalog Log

Retrieve the catalog log for a specified organization.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.catalogLogEntry; type=collection`. Use the `href` to retrieve that catalog log in step 3.
3. **Get Catalog Log**: Retrieve information regarding the catalog log in an organization.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.6 Add a Catalog Item to an Organization

Create a catalog item in a specified organization. The catalog is maintained at the location.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.catalogEntry; type=collection`. Use the `href` to retrieve those catalogs in step 3.

3. **Get Catalog**: Retrieve information regarding all catalogs for an organization.

    a. Select the <Location> for the desired location. Use the <Location … >, with attributes, to create the appropriate body in step 4.

    b.
    - Under <Location> for the desired location,
    - Select the <Action> with a `name` of `createCatalogEntry`. Use the `href` to create the catalog item in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.

4. **Action Catalog Create**: Create the appropriate body for the call and submit to create the new catalog item in a location.

    a. Select the <CatalogEntry> root element in the response. Use the `href` to poll the catalog in step 6.
    b. Select the <File> where the <Name> is `upload.ovf`.
    c. Select the <UploadUrl> of <File> selected in step 4b. Use the `href` to upload the OVF file in step 5.

5. **Action Catalog File**: Upload the OVF file.

    Poll the catalog in step 6.

6. **Get Catalog by ID**: Poll the catalog until the <Status> of <CatalogEntry> is no longer `validating`. If the <Status> of <CatalogEntry> is not `validated`, end the procedure. If the <Status> of <CatalogEntry> is `validated`:

    a. Select the <CatalogEntry> root element in the response. Use the `href` to poll the catalog in step 8.
    b. Select the first <File> where the file extension in <Name> is `vmdk`.
    c. Select the <UploadUrl> of <File> selected in step 6b. Use the `href` to upload the VMDK file in step 7.

7. **Action Catalog File**: Upload the VMDK file.

    Poll the catalog in step 8.

8. **Get Catalog by ID**: Poll the catalog until the <Status> of <File> is no longer `inProgress`. If the <Status> of <CatalogEntry> is not `completed`, end the procedure. If every <File> where the file extension in <Name> is `vmdk` and <Status> is not `Ready`, end the procedure. If a <File> where the file extension in <Name> is `vmdk` is and <Status> is `Ready`:

    a. Select the <CatalogEntry> root element in the response. Use the `href` to poll the catalog in step 8.
    b. Select the <File> where the file extension in <Name> is `vmdk` and <Status> is `Ready`.
    c. Select the <UploadUrl> of <File> selected in step 8b. Use the `href` to upload the VMDK file in step 7.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.7 Delete a Catalog Item from an Organization

Remove a catalog item from a specified organization.

Note: In step 3, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the OVF file is validating: the <CatalogEntry> has a <Status>Validating</Status>.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.catalogEntry; type=collection`. Use the `href` to retrieve the catalog in step 3.
3. **Get Catalog**: Retrieve information regarding all catalogs for an organization.
    - Under the <CatalogEntry> for the desired catalog item,
    - Select the <Action> with a `name` of `remove`. Use the `href` to remove the catalog item in step 4.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
4. **Action Catalog Remove**: Remove the catalog item from an organization.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.19.8 Delete a Catalog Item from a Location

Remove a catalog item from a specified location.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change. The attribute will be set to `disabled` if the OVF file is validating: the <CatalogEntry> has a <Status>Validating</Status>.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Under <Location> for the desired location,
    - Select the <Catalog>. Use the `href` to retrieve that catalog in step 2.
2. **Get Catalog by Location**: Retrieve information regarding a catalog for a location.
    - Under the <CatalogEntry> for the desired catalog item,
    - Select the <Action> with a `name` of `remove`. Use the `href` to remove the catalog item in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Catalog Remove**: Remove the catalog item from a location.

Return to *6.19 VM Catalog*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.20 Support

6.20.1 Retrieve Open Support Tickets 232
6.20.2 Retrieve Closed Support Tickets 232
6.20.3 Retrieve a Specified Support Ticket 233
6.20.4 Submit a Support Ticket 233

You may retrieve support tickets and submit new support tickets.

Note: If the organization has an environment in Amsterdam or Brazil, these features are not available to the organization through the API.

Return to *6 Application Programming Interface Programmer's Guide*.

6.20.1 Retrieve Open Support Tickets

You may retrieve all open support tickets.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Link> with a `type` of `admin.tickets`. Use the `href` to retrieve the references to support tickets in step 3.
3. **Get Support Tickets**: Retrieve the reference to active support tickets for an organization.

    Select <Active>. Use the `href` to retrieve the open support tickets in step 4.
4. **Get Support Tickets Active**: Retrieve the open support tickets for an organization.

Return to *6.20 Support*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.20.2 Retrieve Closed Support Tickets

You may retrieve support tickets closed within the preceding 90 days.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.tickets`. Use the `href` to retrieve the references to support tickets in step 3.

3. **Get Support Tickets**: Retrieve the reference to active support tickets for an organization.

   Select <History>. Use the `href` to retrieve the closed support tickets in step 4.

4. **Get Support Tickets History**: Retrieve the closed support tickets for an organization.

Return to *6.20 Support*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.20.3 Retrieve a Specified Support Ticket

You may retrieve the details regarding a specified support ticket.

1. **Get Organizations**: Retrieve information regarding the organization.

   - Under <Organization> for the desired organization,
   - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.

2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

   Select the <Link> with a `type` of `admin.tickets`. Use the `href` to retrieve the references to support tickets in step 3.

3. **Get Support Tickets**: Retrieve the reference to active support tickets for an organization.

   a. Select <Active>. Use the `href` to retrieve the open support tickets in step 4.
   b. Select <History>. Use the `href` to retrieve the closed support tickets in step 5.

4. **Get Support Tickets Active**: Retrieve the open support tickets for an organization.

   If the desired ticket is an open ticket, select the <TicketReference> for the desired ticket. Use the `href` to retrieve the ticket in step 6.

5. **Get Support Tickets History**: Retrieve the closed support tickets for an organization.

   If the desired ticket is a closed ticket, select the <TicketReference> for the desired ticket. Use the `href` to retrieve the ticket in step 6.

6. **Get Support Tickets by ID**: Retrieve the specified support ticket for the organization.

Return to *6.20 Support*.

Return to *6 Application Programming Interface Programmer's Guide*.

6.20.4 Submit a Support Ticket

You may submit a new support ticket.

Note: In step 2, check whether the attribute `actionDisabled` is set to `noAccess` or `disabled`. The attribute will be set to `noAccess` if the user does not have permission to make the change.

1. **Get Organizations**: Retrieve information regarding the organization.
    - Under <Organization> for the desired organization,
    - Select the <Link> with a `type` of `admin.organization`. Use the href to retrieve that administrative organization in step 2.
2. **Get Administrative Organizations by ID**: Retrieve information regarding the administrative organization.

    Select the <Action> with a `name` of `create`. Use the `href` to create a support ticket in step 3.

    Note: Check whether the<Action> attribute `actionDisabled` is set to `noAccess` or `disabled`. If set, stop the procedure because the action is not permitted.
3. **Action Support Tickets Create**: Create the appropriate body for the call and submit to create a support ticket for the organization.

Return to *6.20 Support*.

Return to *6 Application Programming Interface Programmer's Guide*.

7 Application Programming Interface Reference Guide

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Advance to *8 List of Additions and Changes*.

The Application Programming Interface Reference Guide is a definitive reference to the calls in the Enterprise Cloud Application Programming Interface.

7.1 Anonymous Calls

7.1.1 Get Time 236
7.1.2 Get Versions 238

Advance to *7.2 Organization*.

Anonymous calls are the only calls permitted without authentication. They permit retrieving information essential to achieving successful authentication.

Return to *7 Application Programming Interface Reference Guide*.

7.1.1 Get Time

Get Time is one of two calls which does not require authentication. The Get Time call returns the current UTC time on the server.

Note: This call should have a solidus (forward slash, "/") at the end of the call.

The format of the returned time conforms to the ISO8601 extended date and time format with decimal fraction of a second:

```
<four digit year> “-“ <two digit month> “-“ <two digit day> “T” <two digit hour> “:” <two digit
 minute> “:” <two digit second> “.” <six digit fractional second> “Z”
```

An example of the format of the returned time is:

```
2011-05-12T14:49:10.911161Z
```

Users of the API should request current server time using the **Get Time** call, calculate the time difference between the local computer clock and the Enterprise Cloud clock, and adjust the time stamp in all messages in the session accordingly.

Request

```
GET http://{Terremark URI}/time/
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/time/
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.time
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Time xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <CurrentServerTime>{current UTC server time}</CurrentServerTime>

</Time>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 131
  Content-Type: application/vnd.tmrk.cloud.time
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 May 2011 14:49:10 GMT

<Time xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <CurrentServerTime>2011-05-12T14:49:10.911161Z</CurrentServerTime>

</Time>
```

Return to *7.1 Anonymous Calls*.

Return to *7 Application Programming Interface Reference Guide*.

7.1.2 Get Versions

Get Versions is one of two calls which does not require authentication. The Get Versions call returns the versions available for use on the server.

Note: This call should have a solidus (forward slash, "/") at the end of the call.

The versions are returned in the format as described in *5.8 Version*. Versions of the API are not supported indefinitely. Policy at the time of this document is to support the current version and two prior versions of the API. In advance of the release or new versions of the API, the version to be displaced will be marked as deprecated. <Deprecated> is set to true on deprecated versions. <Deprecated> is generally not included if set to false. Responses to all requests in a deprecated version have the `x-tmrk-deprecated` described in *5.19 Deprecated* header field also set to true.

Request

```
GET http://{Terremark URI}/versions/
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/versions/
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.version; type=collection
  x-tmrk-token: {token}
  Date: {timestamp of response}

<SupportedVersions xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <VersionInfo>

    <Version>{version number in YYY-MM-DD format}</Version>

    <Deprecated>{true | false}</Deprecated> <!-- generally not present if false -->

  </VersionInfo>

    ⋮

</SupportedVersions>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 348
  Content-Type: application/vnd.tmrk.cloud.version; type=collection
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 May 2011 20:00:10 GMT

<SupportedVersions xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <VersionInfo>
```

```
      <Version>2011-01-01</Version>
      <Deprecated>true</Deprecated>
    </VersionInfo>
    <VersionInfo>
      <Version>2011-04-01</Version>
      <Deprecated>false</Deprecated>
    </VersionInfo>
    <VersionInfo>
      <Version>2011-07-01</Version>
      <Deprecated>false</Deprecated>
    </VersionInfo>
  </SupportedVersions>
```

Return to *7.1 Anonymous Calls*.

Return to *7 Application Programming Interface Reference Guide*.

7.2 Organization

7.2.1 Get Organizations 239

7.2.2 Get Organizations by ID 241

Advance to *7.3 Location*.

This section contains the calls for the Organization entity.

Return to *7 Application Programming Interface Reference Guide*.

7.2.1 Get Organizations

The Get Organizations call is the entry point for the API. The call returns links and references, directly or indirectly, to all other branches of the API. This call differs in response from **Get Organizations by ID** only for reseller organizations.

Note: This call should have a solidus (forward slash, "/") at the end of the call.

Request

```
GET http://{Terremark URI}/organizations/
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/organizations/
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.organization; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Organizations href="/organizations" type="application/vnd.tmrk.cloud.organization; type=collection">

  <Organization href="/organizations/{organization identifier}" name="{organization name}"
    type="application/vnd.tmrk.cloud.organization">

    <Links>

      <Link href="/admin/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="alternate"/>

      <Link href="/environments/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.environment; type=collection" rel="down"/>

      <Link href="/deviceTags/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.deviceTag; type=collection" rel="down"/>

    </Links>

    <Locations>

      <Location href="/locations/{location identifier}" name="{location name}"
        type="application/vnd.tmrk.cloud.location">

        <Catalog href="/admin/catalog/organizations/{organization identifier}/locations/{location
          identifier}" type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

        <Environments>

          <Environment href="/environments/{environment identifier}" name="{environment name}"
            type="application/vnd.tmrk.cloud.environment"/>

            ⋮

        </Environments>

      </Location>

        ⋮

    </Locations>

  </Organization>

    ⋮

</Organizations>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1373
  Content-Type: application/vnd.tmrk.cloud.organization; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 May 2011 19:09:13 GMT

<Organizations href="/organizations" type="application/vnd.tmrk.cloud.organization; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <Organization href="/organizations/1" name="Organization 1"
     type="application/vnd.tmrk.cloud.organization">

     <Links>

      <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
       rel="alternate"/>

      <Link href="/environments/organizations/1" type="application/vnd.tmrk.cloud.environment;
       type=collection" rel="down"/>

      <Link href="/deviceTags/organizations/1" type="application/vnd.tmrk.cloud.deviceTag;
       type=collection" rel="down"/>

     </Links>

     <Locations>

      <Location href="/locations/1" name="Location 1" type="application/vnd.tmrk.cloud.location">

       <Catalog href="/admin/catalog/organizations/1/locations/1"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

       <Environments>

        <Environment href="/environments/1" name="Environment 1"
         type="application/vnd.tmrk.cloud.environment"/>

        <Environment href="/environments/2" name="Environment 2"
         type="application/vnd.tmrk.cloud.environment"/>

       </Environments>

      </Location>

      <Location href="/locations/2" name="Location 2" type="application/vnd.tmrk.cloud.location">

       <Catalog href="/admin/catalog/organizations/1/locations/2"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

       <Environments>

        <Environment href="/environments/3" name="Environment 3"
         type="application/vnd.tmrk.cloud.environment"/>

        <Environment href="/environments/4" name="Environment 4"
         type="application/vnd.tmrk.cloud.environment"/>

       </Environments>

      </Location>

     </Locations>

    </Organization>

   </Organizations>
```

Return to *7.2 Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.2.2 Get Organizations by ID

The Get Organizations by ID call returns information regarding a single organization: links and references, directly or indirectly, to all other branches of the API for this organization. The response to this call is similar to that of the

Get Organizations call but limited to the requested organization. This call differs in response from **Get Organizations** only for reseller organizations.

Request

```
GET http://{Terremark URI}/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.organization
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Organization href="/organizations/{organization identifier}" name="{organization name}"
  type="application/vnd.tmrk.cloud.organization" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="alternate"/>

    <Link href="/environments/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.environment; type=collection" rel="down"/>

    <Link href="/deviceTags/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.deviceTag; type=collection" rel="down"/>

  </Links>

  <Locations>

    <Location href="/locations/{location identifier}" name="{location name}"
      type="application/vnd.tmrk.cloud.location">

      <Catalog href="/admin/catalog/organizations/{organization identifier}/locations/{location
        identifier}" type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

      <Environments>

        <Environment href="/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.environment"/>

          ⋮

      </Environments>

    </Location>

      ⋮

  </Locations>

</Organization>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1256
  Content-Type: application/vnd.tmrk.cloud.organization
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 May 2011 21:51:19 GMT

<Organization href="/organizations/1" name="Organization 1"
  type="application/vnd.tmrk.cloud.organization" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="alternate"/>

    <Link href="/environments/organizations/1" type="application/vnd.tmrk.cloud.environment;
      type=collection" rel="down"/>

    <Link href="/deviceTags/organizations/1" type="application/vnd.tmrk.cloud.deviceTag;
      type=collection" rel="down"/>

  </Links>

  <Locations>

    <Location href="/locations/1" name="Location 1" type="application/vnd.tmrk.cloud.location">

      <Catalog href="/admin/catalog/organizations/1/locations/1"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

      <Environments>

        <Environment href="/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.environment"/>

        <Environment href="/environments/2" name="Environment 2"
          type="application/vnd.tmrk.cloud.environment"/>

      </Environments>

    </Location>

    <Location href="/locations/2" name="Location 2" type="application/vnd.tmrk.cloud.location">

      <Catalog href="/admin/catalog/organizations/1/locations/2"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"/>

      <Environments>

        <Environment href="/environments/3" name="Environment 3"
          type="application/vnd.tmrk.cloud.environment"/>

        <Environment href="/environments/4" name="Environment 4"
          type="application/vnd.tmrk.cloud.environment"/>

      </Environments>

    </Location>

  </Locations>

</Organization>
```

Return to *7.2 Organization.*

Return to *7 Application Programming Interface Reference Guide*.

7.3 Location

7.3.1 Get Locations by ID 244

Advance to *7.4 Tag*.

This section contains the calls for the Data Center or Location entity.

Return to *7 Application Programming Interface Reference Guide*.

7.3.1 Get Locations by ID

The Get Locations by ID call returns information regarding a single data center location.

Request

```
GET http://{Terremark URI}/locations/{location identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/locations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.location
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Location href="/locations/{location identifier}" name="{location name}"
  type="application/vnd.tmrk.cloud.location" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <FriendlyName>{location name}</FriendlyName>

  <Locode>{location code}</Locode>

  <ISO3166>{ISO 3166-2 country and subdivision code}</ISO3166>

</Location>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 238
  Content-Type: application/vnd.tmrk.cloud.location
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 May 2011 22:22:35 GMT

<Location href="/locations/1" name="Location 1" type="application/vnd.tmrk.cloud.location"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <FriendlyName>Location 1</FriendlyName>

  <Locode>LOC1</Locode>
```

```
    <ISO3166>US-ST1</ISO3166>
  </Location>
```

Return to *7.3 Location*.

Return to *7 Application Programming Interface Reference Guide*.

7.4 Tag

7.4.1 Get Tags 245

Advance to *7.5 Environment*.

This section contains the calls for the Tag List and Tag entities.

Return to *7 Application Programming Interface Reference Guide*.

7.4.1 Get Tags

The Get Tags call returns information regarding tags in a specified organization.

Request

```
GET http://{Terremark URI}/deviceTags/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/deviceTags/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.deviceTag; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DeviceTagList href="/deviceTags/organizations/{organization identifier}"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <DeviceTag name="{device tag}"/>

    ⋮

</DeviceTagList>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 269
  Content-Type: application/vnd.tmrk.cloud.admin.deviceTag; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 20:42:13 GMT

<DeviceTagList href="/deviceTags/organizations/1" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

  </Links>

  <DeviceTag name="Tag1"/>

  <DeviceTag name="Tag2"/>

</DeviceTagList>
```

Return to *7.4 Tag*.

Return to *7 Application Programming Interface Reference Guide*.

7.5 Environment

7.5.1 Get Environments 246

7.5.2 Get Environments by ID 277

Advance to *7.6 Compute Pool*.

This section contains the calls for the Environment entity.

Return to *7 Application Programming Interface Reference Guide*.

7.5.1 Get Environments

The Get Environments call returns information regarding environments in a specified organization: links and references, directly or indirectly, to all other branches of the API for each environment.

<Tasks> presents the twenty most recent tasks in the environment. For additional tasks, select the <Link> with a `type` of `task; type=collection` and use the `href` to retrieve tasks for the environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has not been defined but not deployed, such as with a physical device.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.

- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
environment identifier = 3	No physical devices
compute pool identifier = 3	No virtual machines

Request

```
GET http://{Terremark URI}/environments/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/environments/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.environment; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Environments href="/environments/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.environment; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Environment href="/environments/{environment identifier}" name="{environment name}"
```

```
type="application/vnd.tmrk.cloud.environment">
<Links>
  <Link href="/locations/{location identifier}" type="application/vnd.tmrk.cloud.location"
   rel="up"/>
  <Link href="/organizations/{organization identifier}"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>
  <Link href="/layout/environments/{environment identifier}"
   type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>
  <Link href="/physicalDevices/environments/{environment identifier}"
   type="application/vnd.tmrk.cloud.physicalDevice; type=collection" rel="down"/>
  <Link href="/tasks/environments/{environment identifier}" type="application/vnd.tmrk.cloud.task;
   type=collection" rel="down"/>
  <Link href="/networks/environments/{environment identifier}"
   type="application/vnd.tmrk.cloud.network; type=collection" rel="down"/>
  <Link href="/networkSummary/environments/{environment identifier}"
   type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>
  <Link href="/computePools/environments/{environment identifier}/resourceSummaryList"
   type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>
</Links>
<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
 type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->
  <Links>
    <Link href="/environments/{environment identifier}" name="{environment name}"
     type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
     item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running --
     >
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
     domain part} | {API user family name}, {API user given name}}"
     type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
    ⋮
  <TotalCount>{total number of tasks}</TotalCount>
</Tasks>
```

```
<ComputePools>
  <ComputePool href="/computePools/{compute pool identifier}" name="{compute pool name}"
    type="application/vnd.tmrk.cloud.computePool">
    <VirtualMachines>
      <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
        name}" type="application/vnd.tmrk.cloud.virtualMachine">
        <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
        <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
        <Memory>
          <Unit>{unit of memory value}</Unit>
          <Value>{memory size}</Value>
        </Memory>
        <Storage>
          <Unit>{unit of storage value}</Unit>
          <Value>{storage size}</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
          pool identifier}" name="{operating system name}"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>{true | false}</PoweredOn>
        <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
      </VirtualMachine>
        ⋮
    </VirtualMachines>
  </ComputePool>
    ⋮
</ComputePools>
<Networks>
<Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
  type="application/vnd.tmrk.cloud.network">
<NetworkType>{Dmz | Internal}</NetworkType>
</Network>
  ⋮
</Networks>
<PhysicalDevices>
  <PhysicalDevice href="/physicalServers/{physical server identifier}" name="{physical server
    name}" type="application/vnd.tmrk.cloud.physicalServer"/>
  <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router
    name}" type="application/vnd.tmrk.cloud.physicalRouter"/>
  <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
```

```
        type="application/vnd.tmrk.cloud.haRouter">
      <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
        type="application/vnd.tmrk.cloud.storageDevice"/>
        ⋮
    </PhysicalDevices>
    <AccessLevelType>{FullControl | ReadOnly}</AccessLevelType>
  </Environment>
    ⋮
</Environments>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 56486
  Content-Type: application/vnd.tmrk.cloud.environment; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 01 Nov 2011 21:20:33 GMT
<Environments href="/environments/organizations/1" type="application/vnd.tmrk.cloud.environment;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Environment href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment">
    <Links>
      <Link href="/locations/1" type="application/vnd.tmrk.cloud.location" rel="up"/>
      <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
      <Link href="/layout/environments/1" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>
      <Link href="/physicalDevices/environments/1" type="application/vnd.tmrk.cloud.physicalDevice;
        type=collection" rel="down"/>
      <Link href="/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=collection"
        rel="down"/>
      <Link href="/networks/environments/1" type="application/vnd.tmrk.cloud.network; type=collection"
        rel="down"/>
      <Link href="/networkSummary/environments/1"
        type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>
      <Link href="/computePools/environments/1/resourceSummaryList"
        type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>
    </Links>
    <Tasks href="/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=collection">
      <Links>
        <Link href="/environments/1" name="My environment"
          type="application/vnd.tmrk.cloud.environment" rel="up"/>
        <Link href="/tasks/environments/1?sortby=starttime&amp;direction=desc&amp;page=2"
          type="application/vnd.tmrk.cloud.task; type=collection" rel="next"/>
        <Link href="/tasks/environments/1?sortby=starttime&amp;direction=desc&amp;page=2"
```

```
    type="application/vnd.tmrk.cloud.task; type=collection" rel="last"/>
  </Links>
  <Task href="/tasks/1020" type="application/vnd.tmrk.cloud.task">
    <Operation>Copy Server</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/virtualMachines/2" name="sample virtual machine 2"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-10-31T21:40:33.8044446Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1019" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Public IP</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/publicIps/2" name="sample public ip 2"
      type="application/vnd.tmrk.cloud.publicIp"/>
    <StartTime>2011-10-31T21:39:33.8044446Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1018" type="application/vnd.tmrk.cloud.task">
    <Operation>Configure RNAT Association</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/ipAddresses/networks/2/2.2.2.2" name="sample ip address 2"
      type="application/vnd.tmrk.cloud.ipAddress"/>
    <StartTime>2011-10-31T21:38:33.8044446Z</StartTime>
    <CompletedTime>2011-10-31T21:39:33.8044446Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <ErrorMessage>sample error message 5 here</ErrorMessage>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1017" type="application/vnd.tmrk.cloud.task">
    <Operation>Configure RNAT Association</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/networks/2" name="sample network 2"
      type="application/vnd.tmrk.cloud.network"/>
    <StartTime>2011-10-31T21:37:33.8044446Z</StartTime>
    <CompletedTime>2011-10-31T21:38:33.8044446Z</CompletedTime>
```

```
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1016" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure Node Service</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/nodeServices/2" name="sample node internet 2"
    type="application/vnd.tmrk.cloud.nodeService"/>
  <StartTime>2011-10-31T21:36:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1015" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Internet Service Monitor</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/internetServices/2" name="sample internet 2"
    type="application/vnd.tmrk.cloud.internetService"/>
  <StartTime>2011-10-31T21:35:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1014" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Trusted Network Group</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/trustedNetworkGroups/1" name="sample trusted network group 1"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  <StartTime>2011-10-31T21:34:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:35:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 4 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1013" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/storageDevices/1" name="sample storage device 1"
    type="application/vnd.tmrk.cloud.storageDevice"/>
  <StartTime>2011-10-31T21:33:33.8044446Z</StartTime>
```

```
  <CompletedTime>2011-10-31T21:34:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1012" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/haRouters/1" name="sample ha router 1"
    type="application/vnd.tmrk.cloud.haRouter"/>
  <StartTime>2011-10-31T21:32:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1011" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/physicalRouters/1" name="sample physical router 1"
    type="application/vnd.tmrk.cloud.physicalRouter"/>
  <StartTime>2011-10-31T21:31:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1010" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/physicalServers/1" name="sample physical server 1"
    type="application/vnd.tmrk.cloud.physicalServer"/>
  <StartTime>2011-10-31T21:30:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:31:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 3 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1009" type="application/vnd.tmrk.cloud.task">
  <Operation>Enable Processor Burst</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/computePools/1" name="sample compute pool 1"
    type="application/vnd.tmrk.cloud.computePool"/>
```

```
  <StartTime>2011-10-31T21:29:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:30:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1008" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure Firewall Log Host</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/firewallLogs/environments/1" name="sample firewall log 1"
    type="application/vnd.tmrk.cloud.firewallLog"/>
  <StartTime>2011-10-31T21:28:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1007" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Firewall Rule</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
    type="application/vnd.tmrk.cloud.firewallAcl"/>
  <StartTime>2011-10-31T21:27:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1006" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Server</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-10-31T21:26:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:27:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 2 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1005" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/publicIps/1" name="sample public ip 1"
```

```
    type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-10-31T21:25:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:26:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1004" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
    type="application/vnd.tmrk.cloud.ipAddress"/>
  <StartTime>2011-10-31T21:24:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1003" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/networks/1" name="sample network 1"
    type="application/vnd.tmrk.cloud.network"/>
  <StartTime>2011-10-31T21:23:33.8044446Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1002" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Node Service</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
    type="application/vnd.tmrk.cloud.nodeService"/>
  <StartTime>2011-10-31T21:22:33.8044446Z</StartTime>
  <CompletedTime>2011-10-31T21:23:33.8044446Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 1 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1001" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Internet Service</Operation>
  <Status>Complete</Status>
```

```
    <ImpactedItem href="/internetServices/1" name="sample internet 1"
     type="application/vnd.tmrk.cloud.internetService"/>

    <StartTime>2011-10-31T21:21:33.8044446Z</StartTime>

    <CompletedTime>2011-10-31T21:22:33.8044446Z</CompletedTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <TotalCount>40</TotalCount>

</Tasks>

<ComputePools>

  <ComputePool href="/computePools/2" name="Compute Group 2"
   type="application/vnd.tmrk.cloud.computePool">

    <VirtualMachines>

      <VirtualMachine href="/virtualMachines/3" name="VM3"
       type="application/vnd.tmrk.cloud.virtualMachine">

        <Status>NotDeployed</Status>

        <ProcessorCount>2</ProcessorCount>

        <Memory>

          <Unit>MB</Unit>

          <Value>1024</Value>

        </Memory>

        <Storage>

          <Unit>GB</Unit>

          <Value>120</Value>

        </Storage>

        <OperatingSystem href="/operatingSystems/win2003ent/computePools/2" name="Windows 2003
         Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>

      </VirtualMachine>

      <VirtualMachine href="/virtualMachines/4" name="VM4"
       type="application/vnd.tmrk.cloud.virtualMachine">

        <Status>Deployed</Status>

        <ProcessorCount>4</ProcessorCount>

        <Memory>

          <Unit>MB</Unit>

          <Value>2048</Value>

        </Memory>

        <Storage>

          <Unit>GB</Unit>

          <Value>10</Value>
```

```
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</ComputePool>
<ComputePool href="/computePools/3" name="Compute Group 3"
  type="application/vnd.tmrk.cloud.computePool"/>
<ComputePool href="/computePools/4" name="Compute Group 4"
  type="application/vnd.tmrk.cloud.computePool">
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Storage>
```

```
    <Unit>GB</Unit>
    <Value>120</Value>
  </Storage>
  <OperatingSystem href="/operatingSystems/win2003ent/computePools/4" name="Windows 2003
    Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
</VirtualMachine>
<VirtualMachine href="/virtualMachines/6" name="VM6"
  type="application/vnd.tmrk.cloud.virtualMachine">
  <Status>Deployed</Status>
  <ProcessorCount>4</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>2048</Value>
  </Memory>
  <Storage>
    <Unit>GB</Unit>
    <Value>10</Value>
  </Storage>
  <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
    type="application/vnd.tmrk.cloud.operatingSystem"/>
  <PoweredOn>true</PoweredOn>
  <ToolsStatus>NotRunning</ToolsStatus>
</VirtualMachine>
<VirtualMachine href="/virtualMachines/7" name="VM7"
  type="application/vnd.tmrk.cloud.virtualMachine">
  <Status>CopyInProgress</Status>
  <ProcessorCount>4</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>2048</Value>
  </Memory>
  <Storage>
    <Unit>GB</Unit>
    <Value>10</Value>
  </Storage>
  <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
    type="application/vnd.tmrk.cloud.operatingSystem"/>
  <PoweredOn>false</PoweredOn>
  <ToolsStatus>NotRunning</ToolsStatus>
```

```
        </VirtualMachine>
      </VirtualMachines>
    </ComputePool>
  </ComputePools>
  <Networks>
    <Network href="/networks/2" name="10.67.2.64/28" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
    <Network href="/networks/3" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Internal</NetworkType>
    </Network>
  </Networks>
  <PhysicalDevices>
    <PhysicalDevice href="/physicalServers/2" name="Server 11"
      type="application/vnd.tmrk.cloud.physicalServer"/>
    <PhysicalDevice href="/physicalRouters/3" name="Router 12"
      type="application/vnd.tmrk.cloud.physicalRouter"/>
  </PhysicalDevices>
</Environment>
<Environment href="/environments/2" name="Environment 2"
  type="application/vnd.tmrk.cloud.environment">
  <Links>
    <Link href="/locations/1" type="application/vnd.tmrk.cloud.location" rel="up"/>
    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/layout/environments/2" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>
    <Link href="/physicalDevices/environments/2" type="application/vnd.tmrk.cloud.physicalDevice;
      type=collection" rel="down"/>
    <Link href="/tasks/environments/2" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>
    <Link href="/networks/environments/2" type="application/vnd.tmrk.cloud.network; type=collection"
      rel="down"/>
    <Link href="/networkSummary/environments/2"
      type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>
    <Link href="/computePools/environments/2/resourceSummaryList"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>
  </Links>
  <Tasks href="/tasks/environments/2" type="application/vnd.tmrk.cloud.task; type=collection">
    <Links>
      <Link href="/environments/2" name="My environment"
        type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/tasks/environments/2?sortby=starttime&amp;direction=desc&amp;page=2"
```

```
    type="application/vnd.tmrk.cloud.task; type=collection" rel="next"/>
  <Link href="/tasks/environments/2?sortby=starttime&amp;direction=desc&amp;page=2"
    type="application/vnd.tmrk.cloud.task; type=collection" rel="last"/>
</Links>
<Task href="/tasks/1020" type="application/vnd.tmrk.cloud.task">
  <Operation>Copy Server</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/virtualMachines/2" name="sample virtual machine 2"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-10-31T21:40:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1019" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/publicIps/2" name="sample public ip 2"
    type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-10-31T21:39:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1018" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure RNAT Association</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/ipAddresses/networks/2/2.2.2.2" name="sample ip address 2"
    type="application/vnd.tmrk.cloud.ipAddress"/>
  <StartTime>2011-10-31T21:38:33.8054447Z</StartTime>
  <CompletedTime>2011-10-31T21:39:33.8054447Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 5 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1017" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure RNAT Association</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/networks/2" name="sample network 2"
    type="application/vnd.tmrk.cloud.network"/>
  <StartTime>2011-10-31T21:37:33.8054447Z</StartTime>
```

```
    <CompletedTime>2011-10-31T21:38:33.8054447Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1016" type="application/vnd.tmrk.cloud.task">
    <Operation>Configure Node Service</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/nodeServices/2" name="sample node internet 2"
      type="application/vnd.tmrk.cloud.nodeService"/>
    <StartTime>2011-10-31T21:36:33.8054447Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1015" type="application/vnd.tmrk.cloud.task">
    <Operation>Add Internet Service Monitor</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/internetServices/2" name="sample internet 2"
      type="application/vnd.tmrk.cloud.internetService"/>
    <StartTime>2011-10-31T21:35:33.8054447Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1014" type="application/vnd.tmrk.cloud.task">
    <Operation>Add Trusted Network Group</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/trustedNetworkGroups/1" name="sample trusted network group 1"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    <StartTime>2011-10-31T21:34:33.8054447Z</StartTime>
    <CompletedTime>2011-10-31T21:35:33.8054447Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <ErrorMessage>sample error message 4 here</ErrorMessage>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1013" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Device</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/storageDevices/1" name="sample storage device 1"
      type="application/vnd.tmrk.cloud.storageDevice"/>
```

```
  <StartTime>2011-10-31T21:33:33.8054447Z</StartTime>
  <CompletedTime>2011-10-31T21:34:33.8054447Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1012" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/haRouters/1" name="sample ha router 1"
   type="application/vnd.tmrk.cloud.haRouter"/>
  <StartTime>2011-10-31T21:32:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1011" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/physicalRouters/1" name="sample physical router 1"
   type="application/vnd.tmrk.cloud.physicalRouter"/>
  <StartTime>2011-10-31T21:31:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1010" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/physicalServers/1" name="sample physical server 1"
   type="application/vnd.tmrk.cloud.physicalServer"/>
  <StartTime>2011-10-31T21:30:33.8054447Z</StartTime>
  <CompletedTime>2011-10-31T21:31:33.8054447Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 3 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1009" type="application/vnd.tmrk.cloud.task">
  <Operation>Enable Processor Burst</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/computePools/1" name="sample compute pool 1"
```

```
    type="application/vnd.tmrk.cloud.computePool"/>
  <StartTime>2011-10-31T21:29:33.8054447Z</StartTime>
  <CompletedTime>2011-10-31T21:30:33.8054447Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1008" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure Firewall Log Host</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/firewallLogs/environments/1" name="sample firewall log 1"
    type="application/vnd.tmrk.cloud.firewallLog"/>
  <StartTime>2011-10-31T21:28:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1007" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Firewall Rule</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
    type="application/vnd.tmrk.cloud.firewallAcl"/>
  <StartTime>2011-10-31T21:27:33.8054447Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1006" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Server</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-10-31T21:26:33.8054447Z</StartTime>
  <CompletedTime>2011-10-31T21:27:33.8054447Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 2 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1005" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Complete</Status>
```

```
    <ImpactedItem href="/publicIps/1" name="sample public ip 1"
     type="application/vnd.tmrk.cloud.publicIp"/>
    <StartTime>2011-10-31T21:25:33.8054447Z</StartTime>
    <CompletedTime>2011-10-31T21:26:33.8054447Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1004" type="application/vnd.tmrk.cloud.task">
    <Operation>Add RNAT Association</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
     type="application/vnd.tmrk.cloud.ipAddress"/>
    <StartTime>2011-10-31T21:24:33.8054447Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1003" type="application/vnd.tmrk.cloud.task">
    <Operation>Add RNAT Association</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/networks/1" name="sample network 1"
     type="application/vnd.tmrk.cloud.network"/>
    <StartTime>2011-10-31T21:23:33.8054447Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1002" type="application/vnd.tmrk.cloud.task">
    <Operation>Add Node Service</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
     type="application/vnd.tmrk.cloud.nodeService"/>
    <StartTime>2011-10-31T21:22:33.8054447Z</StartTime>
    <CompletedTime>2011-10-31T21:23:33.8054447Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <ErrorMessage>sample error message 1 here</ErrorMessage>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1001" type="application/vnd.tmrk.cloud.task">
    <Operation>Add Internet Service</Operation>
```

```
      <Status>Complete</Status>
      <ImpactedItem href="/internetServices/1" name="sample internet 1"
        type="application/vnd.tmrk.cloud.internetService"/>
      <StartTime>2011-10-31T21:21:33.8054447Z</StartTime>
      <CompletedTime>2011-10-31T21:22:33.8054447Z</CompletedTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>40</TotalCount>
  </Tasks>
  <ComputePools>
    <ComputePool href="/computePools/3" name="Compute Group 3"
      type="application/vnd.tmrk.cloud.computePool"/>
    <ComputePool href="/computePools/4" name="Compute Group 4"
      type="application/vnd.tmrk.cloud.computePool">
      <VirtualMachines>
        <VirtualMachine href="/virtualMachines/5" name="VM5"
          type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>NotDeployed</Status>
          <ProcessorCount>2</ProcessorCount>
          <Memory>
            <Unit>MB</Unit>
            <Value>1024</Value>
          </Memory>
          <Storage>
            <Unit>GB</Unit>
            <Value>120</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/win2003ent/computePools/4" name="Windows 2003
            Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
        </VirtualMachine>
        <VirtualMachine href="/virtualMachines/6" name="VM6"
          type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>Deployed</Status>
          <ProcessorCount>4</ProcessorCount>
          <Memory>
            <Unit>MB</Unit>
            <Value>2048</Value>
          </Memory>
```

```
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/7" name="VM7"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</ComputePool>
<ComputePool href="/computePools/5" name="Compute Group 5"
  type="application/vnd.tmrk.cloud.computePool">
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
```

```
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/5" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/7" name="VM7"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/5" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/8" name="VM8"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/5" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>false</PoweredOn>
```

```
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
    </VirtualMachines>
  </ComputePool>
</ComputePools>
<Networks>
  <Network href="/networks/3" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
  </Network>
  <Network href="/networks/4" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Internal</NetworkType>
  </Network>
</Networks>
<PhysicalDevices>
  <PhysicalDevice href="/physicalServers/3" name="Server 21"
    type="application/vnd.tmrk.cloud.physicalServer"/>
  <PhysicalDevice href="/physicalRouters/4" name="Router 22"
    type="application/vnd.tmrk.cloud.physicalRouter"/>
</PhysicalDevices>
</Environment>
<Environment href="/environments/3" name="Environment 3"
  type="application/vnd.tmrk.cloud.environment">
  <Links>
    <Link href="/locations/1" type="application/vnd.tmrk.cloud.location" rel="up"/>
    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/layout/environments/3" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>
    <Link href="/physicalDevices/environments/3" type="application/vnd.tmrk.cloud.physicalDevice;
      type=collection" rel="down"/>
    <Link href="/tasks/environments/3" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>
    <Link href="/networks/environments/3" type="application/vnd.tmrk.cloud.network; type=collection"
      rel="down"/>
    <Link href="/networkSummary/environments/3"
      type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>
    <Link href="/computePools/environments/3/resourceSummaryList"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>
  </Links>
  <Tasks href="/tasks/environments/3" type="application/vnd.tmrk.cloud.task; type=collection">
    <Links>
      <Link href="/environments/3" name="My environment"
```

```
    type="application/vnd.tmrk.cloud.environment" rel="up"/>
  <Link href="/tasks/environments/3?sortby=starttime&amp;direction=desc&amp;page=2"
    type="application/vnd.tmrk.cloud.task; type=collection" rel="next"/>
  <Link href="/tasks/environments/3?sortby=starttime&amp;direction=desc&amp;page=2"
    type="application/vnd.tmrk.cloud.task; type=collection" rel="last"/>
</Links>
<Task href="/tasks/1020" type="application/vnd.tmrk.cloud.task">
  <Operation>Copy Server</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/virtualMachines/2" name="sample virtual machine 2"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-10-31T21:40:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1019" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/publicIps/2" name="sample public ip 2"
    type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-10-31T21:39:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1018" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure RNAT Association</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/ipAddresses/networks/2/2.2.2.2" name="sample ip address 2"
    type="application/vnd.tmrk.cloud.ipAddress"/>
  <StartTime>2011-10-31T21:38:33.8064448Z</StartTime>
  <CompletedTime>2011-10-31T21:39:33.8064448Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 5 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1017" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure RNAT Association</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/networks/2" name="sample network 2"
```

```
    type="application/vnd.tmrk.cloud.network"/>
  <StartTime>2011-10-31T21:37:33.8064448Z</StartTime>
  <CompletedTime>2011-10-31T21:38:33.8064448Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1016" type="application/vnd.tmrk.cloud.task">
  <Operation>Configure Node Service</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/nodeServices/2" name="sample node internet 2"
    type="application/vnd.tmrk.cloud.nodeService"/>
  <StartTime>2011-10-31T21:36:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1015" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Internet Service Monitor</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/internetServices/2" name="sample internet 2"
    type="application/vnd.tmrk.cloud.internetService"/>
  <StartTime>2011-10-31T21:35:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1014" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Trusted Network Group</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/trustedNetworkGroups/1" name="sample trusted network group 1"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  <StartTime>2011-10-31T21:34:33.8064448Z</StartTime>
  <CompletedTime>2011-10-31T21:35:33.8064448Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 4 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1013" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Device</Operation>
  <Status>Complete</Status>
```

```
    <ImpactedItem href="/storageDevices/1" name="sample storage device 1"
     type="application/vnd.tmrk.cloud.storageDevice"/>

    <StartTime>2011-10-31T21:33:33.8064448Z</StartTime>

    <CompletedTime>2011-10-31T21:34:33.8064448Z</CompletedTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/1012" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Running</Status>

    <ImpactedItem href="/haRouters/1" name="sample ha router 1"
     type="application/vnd.tmrk.cloud.haRouter"/>

    <StartTime>2011-10-31T21:32:33.8064448Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/1011" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/physicalRouters/1" name="sample physical router 1"
     type="application/vnd.tmrk.cloud.physicalRouter"/>

    <StartTime>2011-10-31T21:31:33.8064448Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/1010" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Error</Status>

    <ImpactedItem href="/physicalServers/1" name="sample physical server 1"
     type="application/vnd.tmrk.cloud.physicalServer"/>

    <StartTime>2011-10-31T21:30:33.8064448Z</StartTime>

    <CompletedTime>2011-10-31T21:31:33.8064448Z</CompletedTime>

    <Notes>Some notes about the operation.</Notes>

    <ErrorMessage>sample error message 3 here</ErrorMessage>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/1009" type="application/vnd.tmrk.cloud.task">

    <Operation>Enable Processor Burst</Operation>
```

```
    <Status>Complete</Status>
    <ImpactedItem href="/computePools/1" name="sample compute pool 1"
      type="application/vnd.tmrk.cloud.computePool"/>
    <StartTime>2011-10-31T21:29:33.8064448Z</StartTime>
    <CompletedTime>2011-10-31T21:30:33.8064448Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1008" type="application/vnd.tmrk.cloud.task">
    <Operation>Configure Firewall Log Host</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/firewallLogs/environments/1" name="sample firewall log 1"
      type="application/vnd.tmrk.cloud.firewallLog"/>
    <StartTime>2011-10-31T21:28:33.8064448Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1007" type="application/vnd.tmrk.cloud.task">
    <Operation>Create Firewall Rule</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
      type="application/vnd.tmrk.cloud.firewallAcl"/>
    <StartTime>2011-10-31T21:27:33.8064448Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1006" type="application/vnd.tmrk.cloud.task">
    <Operation>Create Server</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-10-31T21:26:33.8064448Z</StartTime>
    <CompletedTime>2011-10-31T21:27:33.8064448Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <ErrorMessage>sample error message 2 here</ErrorMessage>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/1005" type="application/vnd.tmrk.cloud.task">
```

```
  <Operation>Activate Public IP</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/publicIps/1" name="sample public ip 1"
   type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-10-31T21:25:33.8064448Z</StartTime>
  <CompletedTime>2011-10-31T21:26:33.8064448Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1004" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
   type="application/vnd.tmrk.cloud.ipAddress"/>
  <StartTime>2011-10-31T21:24:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1003" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/networks/1" name="sample network 1"
   type="application/vnd.tmrk.cloud.network"/>
  <StartTime>2011-10-31T21:23:33.8064448Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/1002" type="application/vnd.tmrk.cloud.task">
  <Operation>Add Node Service</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
   type="application/vnd.tmrk.cloud.nodeService"/>
  <StartTime>2011-10-31T21:22:33.8064448Z</StartTime>
  <CompletedTime>2011-10-31T21:23:33.8064448Z</CompletedTime>
  <Notes>Some notes about the operation.</Notes>
  <ErrorMessage>sample error message 1 here</ErrorMessage>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

```
    <Task href="/tasks/1001" type="application/vnd.tmrk.cloud.task">
      <Operation>Add Internet Service</Operation>
      <Status>Complete</Status>
      <ImpactedItem href="/internetServices/1" name="sample internet 1"
        type="application/vnd.tmrk.cloud.internetService"/>
      <StartTime>2011-10-31T21:21:33.8064448Z</StartTime>
      <CompletedTime>2011-10-31T21:22:33.8064448Z</CompletedTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>40</TotalCount>
  </Tasks>
  <ComputePools>
    <ComputePool href="/computePools/4" name="Compute Group 4"
      type="application/vnd.tmrk.cloud.computePool">
      <VirtualMachines>
        <VirtualMachine href="/virtualMachines/5" name="VM5"
          type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>NotDeployed</Status>
          <ProcessorCount>2</ProcessorCount>
          <Memory>
            <Unit>MB</Unit>
            <Value>1024</Value>
          </Memory>
          <Storage>
            <Unit>GB</Unit>
            <Value>120</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/win2003ent/computePools/4" name="Windows 2003
            Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
        </VirtualMachine>
        <VirtualMachine href="/virtualMachines/6" name="VM6"
          type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>Deployed</Status>
          <ProcessorCount>4</ProcessorCount>
          <Memory>
            <Unit>MB</Unit>
            <Value>2048</Value>
          </Memory>
```

```
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/7" name="VM7"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</ComputePool>
<ComputePool href="/computePools/5" name="Compute Group 5"
  type="application/vnd.tmrk.cloud.computePool">
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
```

```
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/5" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/7" name="VM7"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/5" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/8" name="VM8"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/5" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>false</PoweredOn>
```

```
          <ToolsStatus>NotRunning</ToolsStatus>
         </VirtualMachine>
        </VirtualMachines>
      </ComputePool>
      <ComputePool href="/computePools/6" name="Compute Group 6"
       type="application/vnd.tmrk.cloud.computePool"/>
    </ComputePools>
    <Networks>
      <Network href="/networks/4" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
      <Network href="/networks/5" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Internal</NetworkType>
      </Network>
    </Networks>
  </Environment>
</Environments>
```

Return to *7.5 Environment*.

Return to *7 Application Programming Interface Reference Guide*.

7.5.2 Get Environments by ID

The Get Environments by ID call returns information regarding a single environment: links and references, directly or indirectly, to all other branches of the API for this environment.

<Tasks> presents the twenty most recent tasks in the environment. For additional tasks, select the <Link> with a `type` of `task; type=collection` and use the `href` to retrieve tasks for the environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has not been defined but not deployed, such as with a physical device.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
environment identifier = 3	No physical devices
compute pool identifier = 3	No virtual machines

Request

```
GET http://{Terremark URI}/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.environment
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Environment href="/environments/{environment identifier}" name="{environment name}"
  type="application/vnd.tmrk.cloud.environment" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/locations/{location identifier}" type="application/vnd.tmrk.cloud.location"
      rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/layout/environments/{environment identifier}"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>
```

```
    <Link href="/physicalDevices/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.physicalDevice; type=collection" rel="down"/>

    <Link href="/tasks/environments/{environment identifier}" type="application/vnd.tmrk.cloud.task;
     type=collection" rel="down"/>

    <Link href="/networks/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.network; type=collection" rel="down"/>

    <Link href="/networkSummary/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>

    <Link href="/computePools/environments/{environment identifier}/resourceSummaryList"
     type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>

    <Link href="/computePools/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.computePool; type=collection" rel="down"/>

  </Links>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
   type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Links>

      <Link href="/environments/{environment identifier" name="{environment name}"
       type="application/vnd.tmrk.cloud.environment" rel="up"/>

    </Links>

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
       item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>

      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
       domain part} | {API user family name}, {API user given name}}"
       type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

      ⋮

    <TotalCount>{total number of tasks}</TotalCount>

  </Tasks>

  <ComputePools>

    <ComputePool href="/computePools/{compute pool identifier}" name="{compute pool name}"
     type="application/vnd.tmrk.cloud.computePool">

      <VirtualMachines>

        <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
         name}" type="application/vnd.tmrk.cloud.virtualMachine">

          <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
```

```
        <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
        <Memory>
          <Unit>{unit of memory value}</Unit>
          <Value>{memory size}</Value>
        </Memory>
        <Storage>
          <Unit>{unit of storage value}</Unit>
          <Value>{storage size}</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
          pool identifier}" name="{operating system name}"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>{true | false}</PoweredOn>
        <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
      </VirtualMachine>
        ⋮
    </VirtualMachines>
  </ComputePool>
    ⋮
</ComputePools>
<Networks>
  <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
    type="application/vnd.tmrk.cloud.network">
    <NetworkType>{Dmz | Internal}</NetworkType>
  </Network>
    ⋮
</Networks>
<PhysicalDevices>
  <PhysicalDevice href="/physicalServers/{physical server identifier}" name="{physical server name}"
    type="application/vnd.tmrk.cloud.physicalServer"/>
  <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router name}"
    type="application/vnd.tmrk.cloud.physicalRouter"/>
  <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
    type="application/vnd.tmrk.cloud.haRouter">
  <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
    type="application/vnd.tmrk.cloud.storageDevice"/>
    ⋮
</PhysicalDevices>
</Environment>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 16494
  Content-Type: application/vnd.tmrk.cloud.environment
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 01 Nov 2011 21:11:15 GMT

<Environment href="/environments/1" name="Environment 1"
  type="application/vnd.tmrk.cloud.environment" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/locations/1" type="application/vnd.tmrk.cloud.location" rel="up"/>

    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/layout/environments/1" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>

    <Link href="/physicalDevices/environments/1" type="application/vnd.tmrk.cloud.physicalDevice;
      type=collection" rel="down"/>

    <Link href="/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

    <Link href="/networks/environments/1" type="application/vnd.tmrk.cloud.network; type=collection"
      rel="down"/>

    <Link href="/networkSummary/environments/1"
      type="application/vnd.tmrk.cloud.environmentNetworkSummary" rel="down"/>

    <Link href="/computePools/environments/1/resourceSummaryList"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection" rel="down"/>

    <Link href="/computePools/environments/1" type="application/vnd.tmrk.cloud.computePool;
      type=collection" rel="down"/>

  </Links>

  <Tasks href="/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=collection">

    <Links>

      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>

    </Links>

    <Task href="/tasks/1000" type="application/vnd.tmrk.cloud.task">

      <Operation>Create Firewall Rule</Operation>

      <Status>Complete</Status>

      <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
        type="application/vnd.tmrk.cloud.firewallAcl"/>

      <StartTime>2011-09-08T14:51:20.4104712Z</StartTime>

      <CompletedTime>2011-09-08T15:00:20.4104712Z</CompletedTime>

      <Notes>sample notes here1000</Notes>

      <ErrorMessage/>

      <InitiatedBy href="/admin/users/1000" name="user 1000"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>
```

```
<Task href="/tasks/999" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Server</Operation>
  <Status>Running</Status>
  <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-09-08T14:50:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:59:20.4104712Z</CompletedTime>
  <Notes>sample notes here999</Notes>
  <ErrorMessage/>
  <InitiatedBy href="/admin/users/999" name="user 999"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/998" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/publicIps/1" name="sample public ip 1"
    type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-09-08T14:49:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:58:20.4104712Z</CompletedTime>
  <Notes>sample notes here998</Notes>
  <ErrorMessage/>
  <InitiatedBy href="/admin/users/998" name="user 998"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/997" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
    type="application/vnd.tmrk.cloud.ipAddress"/>
  <StartTime>2011-09-08T14:48:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:57:20.4104712Z</CompletedTime>
  <Notes>sample notes here997</Notes>
  <ErrorMessage>sample error message here997</ErrorMessage>
  <InitiatedBy href="/admin/users/997" name="user 997"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/996" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Complete</Status>
```

```
    <ImpactedItem href="/networks/1" name="sample network 1"
     type="application/vnd.tmrk.cloud.network"/>

    <StartTime>2011-09-08T14:47:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:56:20.4104712Z</CompletedTime>

    <Notes>sample notes here996</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/996" name="user 996"
     type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/995" type="application/vnd.tmrk.cloud.task">

    <Operation>Add Node Service</Operation>

    <Status>Running</Status>

    <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
     type="application/vnd.tmrk.cloud.nodeService"/>

    <StartTime>2011-09-08T14:46:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:55:20.4104712Z</CompletedTime>

    <Notes>sample notes here995</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/995" name="user 995"
     type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/994" type="application/vnd.tmrk.cloud.task">

    <Operation>Add Internet Service</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/internetServices/1" name="sample internet 1"
     type="application/vnd.tmrk.cloud.internetService"/>

    <StartTime>2011-09-08T14:45:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:54:20.4104712Z</CompletedTime>

    <Notes>sample notes here994</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/994" name="user 994"
     type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/993" type="application/vnd.tmrk.cloud.task">

    <Operation>Add Trusted Network Group</Operation>

    <Status>Error</Status>

    <ImpactedItem href="/trustedNetworkGroups/1" name="sample trusted network group 1"
     type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

    <StartTime>2011-09-08T14:44:20.4104712Z</StartTime>
```

```
    <CompletedTime>2011-09-08T14:53:20.4104712Z</CompletedTime>

    <Notes>sample notes here993</Notes>

    <ErrorMessage>sample error message here993</ErrorMessage>

    <InitiatedBy href="/admin/users/993" name="user 993"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/992" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Complete</Status>

    <ImpactedItem href="/storageDevices/1" name="sample storage device 1"
      type="application/vnd.tmrk.cloud.storageDevice"/>

    <StartTime>2011-09-08T14:43:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:52:20.4104712Z</CompletedTime>

    <Notes>sample notes here992</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/992" name="user 992"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/991" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Running</Status>

    <ImpactedItem href="/haRouters/1" name="sample ha router 1"
      type="application/vnd.tmrk.cloud.haRouter"/>

    <StartTime>2011-09-08T14:42:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:51:20.4104712Z</CompletedTime>

    <Notes>sample notes here991</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/991" name="user 991"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/990" type="application/vnd.tmrk.cloud.task">

    <Operation>Activate Device</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/physicalRouters/1" name="sample physical router 1"
      type="application/vnd.tmrk.cloud.physicalRouter"/>

    <StartTime>2011-09-08T14:41:20.4104712Z</StartTime>

    <CompletedTime>2011-09-08T14:50:20.4104712Z</CompletedTime>

    <Notes>sample notes here990</Notes>

    <ErrorMessage/>
```

```
  <InitiatedBy href="/admin/users/990" name="user 990"
   type="application/vnd.tmrk.cloud.admin.user"/>

</Task>

<Task href="/tasks/989" type="application/vnd.tmrk.cloud.task">

  <Operation>Activate Device</Operation>

  <Status>Error</Status>

  <ImpactedItem href="/physicalServers/1" name="sample physical server 1"
   type="application/vnd.tmrk.cloud.physicalServer"/>

  <StartTime>2011-09-08T14:40:20.4104712Z</StartTime>

  <CompletedTime>2011-09-08T14:49:20.4104712Z</CompletedTime>

  <Notes>sample notes here989</Notes>

  <ErrorMessage>sample error message here989</ErrorMessage>

  <InitiatedBy href="/admin/users/989" name="user 989"
   type="application/vnd.tmrk.cloud.admin.user"/>

</Task>

<Task href="/tasks/988" type="application/vnd.tmrk.cloud.task">

  <Operation>Enable Processor Burst</Operation>

  <Status>Complete</Status>

  <ImpactedItem href="/computePools/1" name="sample compute pool 1"
   type="application/vnd.tmrk.cloud.computePool"/>

  <StartTime>2011-09-08T14:39:20.4104712Z</StartTime>

  <CompletedTime>2011-09-08T14:48:20.4104712Z</CompletedTime>

  <Notes>sample notes here988</Notes>

  <ErrorMessage/>

  <InitiatedBy href="/admin/users/988" name="user 988"
   type="application/vnd.tmrk.cloud.admin.user"/>

</Task>

<Task href="/tasks/987" type="application/vnd.tmrk.cloud.task">

  <Operation>Configure Firewall Log Host</Operation>

  <Status>Running</Status>

  <ImpactedItem href="/firewallLogs/environments/1" name="sample firewall log 1"
   type="application/vnd.tmrk.cloud.firewallLog"/>

  <StartTime>2011-09-08T14:38:20.4104712Z</StartTime>

  <CompletedTime>2011-09-08T14:47:20.4104712Z</CompletedTime>

  <Notes>sample notes here987</Notes>

  <ErrorMessage/>

  <InitiatedBy href="/admin/users/987" name="user 987"
   type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

```
<Task href="/tasks/986" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Firewall Rule</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
    type="application/vnd.tmrk.cloud.firewallAcl"/>
  <StartTime>2011-09-08T14:37:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:46:20.4104712Z</CompletedTime>
  <Notes>sample notes here986</Notes>
  <ErrorMessage/>
  <InitiatedBy href="/admin/users/986" name="user 986"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/985" type="application/vnd.tmrk.cloud.task">
  <Operation>Create Server</Operation>
  <Status>Error</Status>
  <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-09-08T14:36:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:45:20.4104712Z</CompletedTime>
  <Notes>sample notes here985</Notes>
  <ErrorMessage>sample error message here985</ErrorMessage>
  <InitiatedBy href="/admin/users/985" name="user 985"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/984" type="application/vnd.tmrk.cloud.task">
  <Operation>Activate Public IP</Operation>
  <Status>Complete</Status>
  <ImpactedItem href="/publicIps/1" name="sample public ip 1"
    type="application/vnd.tmrk.cloud.publicIp"/>
  <StartTime>2011-09-08T14:35:20.4104712Z</StartTime>
  <CompletedTime>2011-09-08T14:44:20.4104712Z</CompletedTime>
  <Notes>sample notes here984</Notes>
  <ErrorMessage/>
  <InitiatedBy href="/admin/users/984" name="user 984"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
<Task href="/tasks/983" type="application/vnd.tmrk.cloud.task">
  <Operation>Add RNAT Association</Operation>
  <Status>Running</Status>
```

```
      <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
        type="application/vnd.tmrk.cloud.ipAddress"/>

      <StartTime>2011-09-08T14:34:20.4104712Z</StartTime>

      <CompletedTime>2011-09-08T14:43:20.4104712Z</CompletedTime>

      <Notes>sample notes here983</Notes>

      <ErrorMessage/>

      <InitiatedBy href="/admin/users/983" name="user 983"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <Task href="/tasks/982" type="application/vnd.tmrk.cloud.task">

      <Operation>Add RNAT Association</Operation>

      <Status>Queued</Status>

      <ImpactedItem href="/networks/1" name="sample network 1"
        type="application/vnd.tmrk.cloud.network"/>

      <StartTime>2011-09-08T14:33:20.4104712Z</StartTime>

      <CompletedTime>2011-09-08T14:42:20.4104712Z</CompletedTime>

      <Notes>sample notes here982</Notes>

      <ErrorMessage/>

      <InitiatedBy href="/admin/users/982" name="user 982"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <Task href="/tasks/981" type="application/vnd.tmrk.cloud.task">

      <Operation>Add Node Service</Operation>

      <Status>Error</Status>

      <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
        type="application/vnd.tmrk.cloud.nodeService"/>

      <StartTime>2011-09-08T14:32:20.4104712Z</StartTime>

      <CompletedTime>2011-09-08T14:41:20.4104712Z</CompletedTime>

      <Notes>sample notes here981</Notes>

      <ErrorMessage>sample error message here981</ErrorMessage>

      <InitiatedBy href="/admin/users/981" name="user 981"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <TotalCount>1000</TotalCount>

  </Tasks>

  <ComputePools>

    <ComputePool href="/computePools/2" name="Compute Group 2"
      type="application/vnd.tmrk.cloud.computePool">

      <VirtualMachines>

        <VirtualMachine href="/virtualMachines/3" name="VM3"
```

```
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>NotDeployed</Status>
    <ProcessorCount>2</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>1024</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/2" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/4" name="VM4"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/5" name="VM5"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
```

```
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</ComputePool>
<ComputePool href="/computePools/3" name="Compute Group 3"
  type="application/vnd.tmrk.cloud.computePool"/>
<ComputePool href="/computePools/4" name="Compute Group 4"
  type="application/vnd.tmrk.cloud.computePool">
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>120</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/win2003ent/computePools/4" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>Deployed</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
```

```
        </Memory>
        <Storage>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>true</PoweredOn>
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
      <VirtualMachine href="/virtualMachines/7" name="VM7"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Status>CopyInProgress</Status>
        <ProcessorCount>4</ProcessorCount>
        <Memory>
          <Unit>MB</Unit>
          <Value>2048</Value>
        </Memory>
        <Storage>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>false</PoweredOn>
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
    </VirtualMachines>
  </ComputePool>
</ComputePools>
<Networks>
  <Network href="/networks/2" name="10.67.2.64/28" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
  </Network>
  <Network href="/networks/3" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Internal</NetworkType>
  </Network>
</Networks>
```

```
    <PhysicalDevices>
      <PhysicalDevice href="/physicalServers/2" name="Server 11"
        type="application/vnd.tmrk.cloud.physicalServer"/>
      <PhysicalDevice href="/physicalRouters/3" name="Router 12"
        type="application/vnd.tmrk.cloud.physicalRouter"/>
    </PhysicalDevices>
  </Environment>
```

Return to *7.5 Environment*.

Return to *7 Application Programming Interface Reference Guide*.

7.6 Compute Pool

7.6.1 Get Compute Pools 291

7.6.2 Get Compute Pools by ID 296

7.6.3 Action Compute Pools Edit 304

Advance to *7.7 Resource*.

This section contains the calls for the Compute Pool entity.

Return to *7 Application Programming Interface Reference Guide*.

7.6.1 Get Compute Pools

The Get Compute Pools call returns information regarding compute pools defined in an environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> of <VirtualMachine> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has not been defined but not deployed, such as with a physical device.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<Action> for <CpuBurst> and <MemoryBurst> will depend upon the <Status>. The available action for processor burst and memory burst for the two values of <Status> are shown in the table.

Burst	**<Action> Attributes**
<Status>Enabled<Status/>	

Burst	<Action> Attributes
Processor	href="/computePools/{compute pool identifier}/action/disableCpuBurst" name="disableCpuBurst"
Memory	href="/computePools/{compute pool identifier}/action/disableMemoryBurst" name="disableMemoryBurst"
<Status>Disabled<Status/>	
Processor	href="/computePools/{compute pool identifier}/action/enableCpuBurst" name="enableCpuBurst"
Memory	href="/computePools/{compute pool identifier}/action/enableMemoryBurst" name="enableMemoryBurst"

Live Specification Test Values

Condition	Outcome
compute pool identifier = 1	Error: Already bursting
compute pool identifier = 2	Enable burst
compute pool identifier> 2 and < 99	Error: Feature disabled
compute pool identifier = 99	Error: Unauthorized
compute pool identifier> 2	No virtual machines

Request

```
GET http://{Terremark URI}/computePools/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePool; type=collection
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePools href="/computePools/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.computePool; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <ComputePool href="/computePools/{compute pool identifier}" name="{compute pool name}"
```

```
      type="application/vnd.tmrk.cloud.computePool">
      <VirtualMachines>
        <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
          name}" type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
          <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
          <Memory>
            <Unit>{unit of memory value}</Unit>
            <Value>{memory size}</Value>
          </Memory>
          <Storage>
            <Unit>{unit of storage value}</Unit>
            <Value>{storage size}</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
            pool identifier}" name="{operating system name}"
            type="application/vnd.tmrk.cloud.operatingSystem"/>
          <PoweredOn>{true | false}</PoweredOn>
          <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
        </VirtualMachine>
          ⋮
      </VirtualMachines>
    </ComputePool>
      ⋮
  </ComputePools>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 3380
    Content-Type: application/vnd.tmrk.cloud.computePool
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 02 Nov 2011 16:25:48 GMT
  <ComputePools href="/computePools/environments/1" type="application/vnd.tmrk.cloud.computePool;
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
    </Links>
    <ComputePool href="/computePools/2" name="Compute Group 2"
      type="application/vnd.tmrk.cloud.computePool">
      <VirtualMachines>
```

```
<VirtualMachine href="/virtualMachines/3" name="VM3"
  type="application/vnd.tmrk.cloud.virtualMachine">
  <Status>NotDeployed</Status>
  <ProcessorCount>2</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>1024</Value>
  </Memory>
  <Storage>
    <Unit>GB</Unit>
    <Value>120</Value>
  </Storage>
  <OperatingSystem href="/operatingSystems/win2003ent/computePools/2" name="Windows 2003
    Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
</VirtualMachine>
<VirtualMachine href="/virtualMachines/4" name="VM4"
  type="application/vnd.tmrk.cloud.virtualMachine">
  <Status>Deployed</Status>
  <ProcessorCount>4</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>2048</Value>
  </Memory>
  <Storage>
    <Unit>GB</Unit>
    <Value>10</Value>
  </Storage>
  <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
    type="application/vnd.tmrk.cloud.operatingSystem"/>
  <PoweredOn>true</PoweredOn>
  <ToolsStatus>NotRunning</ToolsStatus>
</VirtualMachine>
<VirtualMachine href="/virtualMachines/5" name="VM5"
  type="application/vnd.tmrk.cloud.virtualMachine">
  <Status>CopyInProgress</Status>
  <ProcessorCount>4</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>2048</Value>
```

```
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/2" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</ComputePool>
<ComputePool href="/computePools/3" name="Compute Group 3"
  type="application/vnd.tmrk.cloud.computePool"/>
<ComputePool href="/computePools/4" name="Compute Group 4"
  type="application/vnd.tmrk.cloud.computePool">
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>120</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/win2003ent/computePools/4" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>Deployed</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
```

```
        </Memory>
        <Storage>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>true</PoweredOn>
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
      <VirtualMachine href="/virtualMachines/7" name="VM7"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Status>CopyInProgress</Status>
        <ProcessorCount>4</ProcessorCount>
        <Memory>
          <Unit>MB</Unit>
          <Value>2048</Value>
        </Memory>
        <Storage>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/4" name="Red Hat Linux 32 Bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>false</PoweredOn>
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
    </VirtualMachines>
  </ComputePool>
</ComputePools>
```


Return to *7.6 Compute Pool*.

Return to *7 Application Programming Interface Reference Guide*.

7.6.2 Get Compute Pools by ID

The Get Compute Pools by ID call returns information regarding a specified compute pool defined in an environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> of <VirtualMachine> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has not been defined but not deployed, such as with a physical device.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<Action> for <CpuBurst> and <MemoryBurst> will depend upon the <Status>. The available action for processor burst and memory burst for the two values of <Status> are shown in the table.

Burst	**<Action> Attributes**
<Status>Enabled<Status/>	
Processor	href="/computePools/{compute pool identifier}/action/disableCpuBurst" name="disableCpuBurst"
Memory	href="/computePools/{compute pool identifier}/action/disableMemoryBurst" name="disableMemoryBurst"
<Status>Disabled<Status/>	
Processor	href="/computePools/{compute pool identifier}/action/enableCpuBurst" name="enableCpuBurst"
Memory	href="/computePools/{compute pool identifier}/action/enableMemoryBurst" name="enableMemoryBurst"

Live Specification Test Values

Condition	**Outcome**
compute pool identifier = 1	Error: Already bursting
compute pool identifier = 2	Enable burst
compute pool identifier> 2 and < 99	Error: Feature disabled
compute pool identifier = 99	Error: Unauthorized
compute pool identifier> 2	No virtual machines

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePool
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePool href="/computePools/{compute pool identifier}" name="{compute pool name}"
  type="application/vnd.tmrk.cloud.computePool" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/environments/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.environment; type=collection" rel="up"/>

    <Link href="/environments/{environment identifier}" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/admin/catalog/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="up"/>

    <Link href="/templates/computePools/{compute pool identifier}"
      type="application/vnd.tmrk.cloud.template; type=collection" rel="down"/>

    <Link href="/computePools/{compute pool identifier}/usage/memory"
      type="application/vnd.tmrk.cloud.computePoolMemoryUsage" rel="down"/>

    <Link href="/computePools/{compute pool identifier}/usage/cpu"
      type="application/vnd.tmrk.cloud.computePoolCpuUsage" rel="down"/>

    <Link href="/computePools/{compute pool identifier}/usage/storage"
      type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail" rel="down"/>

    <Link href="/computePools/{compute pool identifier}/resourceSummary"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary" rel="down"/>

    <Link href="/computePools/{compute pool identifier}/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="down"/>

    <Link href="/operatingSystemFamilies/computePools/{compute pool identifier}"
      type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection" rel="down"/>

    <Link href="/layout/computePools/{compute pool identifier}"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>

    <Link href="/virtualMachines/computePools/{compute pool identifier}"
      type="application/vnd.tmrk.cloud.virtualMachine; type=collection" rel="down"/>

    <Link href="/detachedDisks/computePools/{compute pool identifier}"
      type="application/vnd.tmrk.cloud.detachedDisk; type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/computePools/{compute pool identifier}" name="edit"
      type="application/vnd.tmrk.cloud.computePool"/>

    <Action href="/virtualMachines/computePools/{compute pool identifier}/action/createVirtualMachine"
      name="createVirtualMachine" type="application/vnd.tmrk.cloud.createVirtualMachine"/>

    <Action href="/virtualMachines/computePools/{compute pool identifier}/action/copyVirtualMachine"
```

```
    name="copyVirtualMachine" type="application/vnd.tmrk.cloud.copyVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool
    identifier}/action/copyIdenticalVirtualMachine" name="copyIdenticalVirtualMachine"
    type="application/vnd.tmrk.cloud.copyIdenticalVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool
    identifier}/action/createBlankVirtualMachine" name="createBlankVirtualMachine"
    type="application/vnd.tmrk.cloud.createBlankVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool identifier}/action/importVirtualMachine"
    name="importVirtualMachine" type="application/vnd.tmrk.cloud.importVirtualMachine"/>

</Actions>

<VirtualMachines>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

    <Memory>

      <Unit>{unit of memory value}</Unit>

      <Value>{memory size}</Value>

    </Memory>

    <Storage>

      <Unit>{unit of storage value}</Unit>

      <Value>{storage size}</Value>

    </Storage>

    <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
      pool identifier}" name="{operating system name}"
      type="application/vnd.tmrk.cloud.operatingSystem"/>

    <PoweredOn>{true | false}</PoweredOn>

    <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>

  </VirtualMachine>

    ⋮

</VirtualMachines>

<Purchased>

  <Cpu>

    <Unit>{unit of processor value}</Unit>

    <Value>{processor purchased}</Value>

  </Cpu>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>
```

```
      <Storage>
        <Unit>{unit of storage value}</Unit>
        <Value>{storage size}</Value>
      </Storage>
    </Purchased>
    <CpuBurst>
      <Actions>
        <Action href="/computePools/{compute pool identifier}/action/disableCpuBurst"
          name="disableCpuBurst" type="application/vnd.tmrk.cloud.task"/>
        <Action href="/computePools/{compute pool identifier}/action/enableCpuBurst"
          name="enableCpuBurst" type="application/vnd.tmrk.cloud.task" actionDisabled="{noAccess |
          disabled}"/>
      </Actions>
      <Status>{Disabled | Enabled}</Status>
    </CpuBurst>
    <MemoryBurst>
      <Actions>
        <Action href="/computePools/{compute pool identifier}/action/disableMemoryBurst"
          name="disableMemoryBurst" type="application/vnd.tmrk.cloud.task"/>
        <Action href="/computePools/{compute pool identifier}/action/enableMemoryBurst"
          name="enableMemoryBurst" type="application/vnd.tmrk.cloud.task" actionDisabled="{noAccess |
          disabled}"/>
      </Actions>
      <Status>{Disabled | Enabled}</Status>
    </MemoryBurst>
  </ComputePool>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 5639
    Content-Type: application/vnd.tmrk.cloud.computePool
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 13 Jan 2012 17:44:22 GMT
  <ComputePool href="/computePools/1" name="Compute Pool 1"
    type="application/vnd.tmrk.cloud.computePool" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
      <Link href="/environments/organizations/1" type="application/vnd.tmrk.cloud.environment;
        type=collection" rel="up"/>
      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
```

```
    <Link href="/admin/catalog/organizations/1" type="application/vnd.tmrk.cloud.admin.catalogEntry;
      type=collection" rel="up"/>

    <Link href="/templates/computePools/1" type="application/vnd.tmrk.cloud.template; type=collection"
      rel="down"/>

    <Link href="/computePools/1/usage/memory" type="application/vnd.tmrk.cloud.computePoolMemoryUsage"
      rel="down"/>

    <Link href="/computePools/1/usage/cpu" type="application/vnd.tmrk.cloud.computePoolCpuUsage"
      rel="down"/>

    <Link href="/computePools/1/usage/storage"
      type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail" rel="down"/>

    <Link href="/resourceSummary/computePools/1"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary" rel="down"/>

    <Link href="/computePools/1/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="down"/>

    <Link href="/operatingSystemFamilies/computePools/1"
      type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection" rel="down"/>

    <Link href="/layout/computePools/1" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>

    <Link href="/virtualMachines/computePools/1" type="application/vnd.tmrk.cloud.virtualMachine;
      type=collection" rel="down"/>

    <Link href="/detachedDisks/computePools/1" type="application/vnd.tmrk.cloud.detachedDisk;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/computePools/1" name="edit" type="application/vnd.tmrk.cloud.computePool"/>

    <Action href="/virtualMachines/computePools/1/action/createVirtualMachine"
      name="createVirtualMachine" type="application/vnd.tmrk.cloud.createVirtualMachine"/>

    <Action href="/virtualMachines/computePools/1/action/copyVirtualMachine" name="copyVirtualMachine"
      type="application/vnd.tmrk.cloud.copyVirtualMachine"/>

    <Action href="/virtualMachines/computePools/1/action/copyIdenticalVirtualMachine"
      name="copyVirtualMachine" type="application/vnd.tmrk.cloud.copyIdenticalVirtualMachine"/>

    <Action href="/virtualMachines/computePools/1/action/createBlankVirtualMachine"
      name="createBlankVirtualMachine" type="application/vnd.tmrk.cloud.createBlankVirtualMachine"/>

    <Action href="/virtualMachines/computePools/1/action/importVirtualMachine"
      name="importVirtualMachine" type="application/vnd.tmrk.cloud.importVirtualMachine"/>

  </Actions>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>NotDeployed</Status>

      <ProcessorCount>2</ProcessorCount>

      <Memory>

        <Unit>MB</Unit>

        <Value>1024</Value>
```

```
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/2" name="VM2"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/3" name="VM3"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
```

```
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
  <Purchased>
    <Cpu>
      <Unit>MHz</Unit>
      <Value>1</Value>
    </Cpu>
    <Memory>
      <Unit>GB</Unit>
      <Value>2</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>250</Value>
    </Storage>
  </Purchased>
  <CpuBurst>
    <Actions>
      <Action href="/computePools/1/action/disableCpuBurst" name="disableCpuBurst"
        type="application/vnd.tmrk.cloud.task"/>
      <Action href="/computePools/1/action/enableCpuBurst" name="enableCpuBurst"
        type="application/vnd.tmrk.cloud.task" actionDisabled="disabled"/>
    </Actions>
    <Status>Enabled</Status>
  </CpuBurst>
  <MemoryBurst>
    <Actions>
      <Action href="/computePools/1/action/disableMemoryBurst" name="disableMemoryBurst"
        type="application/vnd.tmrk.cloud.task"/>
      <Action href="/computePools/1/action/enableMemoryBurst" name="enableMemoryBurst"
        type="application/vnd.tmrk.cloud.task" actionDisabled="disabled"/>
    </Actions>
    <Status>Enabled</Status>
  </MemoryBurst>
</ComputePool>
```


Return to *7.6 Compute Pool*.

Return to *7 Application Programming Interface Reference Guide*.

7.6.3 Action Compute Pools Edit

The Action Compute Pools Edit call edits the name for a specified compute pool. If successful, the call returns information regarding the compute pool that was modified.

The `name` attribute on <ComputePool … > is required, may not exceed twenty-five characters, and may be changed.

<VirtualMachines> and <Purchased> are optional and ignored if present.

<CpuBurst> and <MemoryBurst> are optional and ignored if present. To enable processor or memory burst, use the calls **Action Resources Enable Burst Processor** and **Action Resources Enable Burst Memory** respectively. To disable processor or memory burst, use the calls **Action Resources Disable Burst Processor** and **Action Resources Disable Burst Memory** respectively.

Request

```
PUT http://{Terremark URI}/computePools/{compute pool identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/computePools/2
```

Body

```
<ComputePool name="{compute pool name}"> <!-- Required -->
  <VirtualMachines> <!-- Optional, ignored if present -->
    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
      <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
      <Memory>
        <Unit>{unit of memory value}</Unit>
        <Value>{memory size}</Value>
      </Memory>
      <Storage>
        <Unit>{unit of storage value}</Unit>
        <Value>{storage size}</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
        pool identifier}" name="{operating system name}"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>{true | false}</PoweredOn>
      <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
```

```
      </VirtualMachine>
        ⋮
    </VirtualMachines>
    <Purchased> <!-- Optional, ignored if present -->
      <Cpu>
        <Unit>{unit of processor value}</Unit>
        <Value>{processor purchased}</Value>
      </Cpu>
      <Memory>
        <Unit>{unit of memory value}</Unit>
        <Value>{memory size}</Value>
      </Memory>
      <Storage>
        <Unit>{unit of storage value}</Unit>
        <Value>{storage size}</Value>
      </Storage>
    </Purchased>
    <CpuBurst> <!-- Optional, ignored if present -->
      <Status>{Disabled | Enabled}</Status>
    </CpuBurst>
    <MemoryBurst> <!-- Optional, ignored if present -->
      <Status>{Disabled | Enabled}</Status>
    </MemoryBurst>
  </ComputePool>
```

EXAMPLE

```
  <ComputePool name="Compute Pool New 1"/>
```

Response

```
  HTTP/1.1 200 OK
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.task
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
  <ComputePool href="/computePools/{compute pool identifier}" name="{compute pool name}"
    type="application/vnd.tmrk.cloud.computePool" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
      <Link href="/environments/organizations/{organization identifier}"
```

```
    type="application/vnd.tmrk.cloud.environment; type=collection" rel="up"/>

  <Link href="/environments/{environment identifier}" name="{environment name}"
    type="application/vnd.tmrk.cloud.environment" rel="up"/>

  <Link href="/admin/catalog/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="up"/>

  <Link href="/templates/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.template; type=collection" rel="down"/>

  <Link href="/computePools/{compute pool identifier}/usage/memory"
    type="application/vnd.tmrk.cloud.computePoolMemoryUsage" rel="down"/>

  <Link href="/computePools/{compute pool identifier}/usage/cpu"
    type="application/vnd.tmrk.cloud.computePoolCpuUsage" rel="down"/>

  <Link href="/computePools/{compute pool identifier}/usage/storage"
    type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail" rel="down"/>

  <Link href="/computePools/{compute pool identifier}/resourceSummary"
    type="application/vnd.tmrk.cloud.computePoolResourceSummary" rel="down"/>

  <Link href="/computePools/{compute pool identifier}/performanceStatistics"
    type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="down"/>

  <Link href="/operatingSystemFamilies/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection" rel="down"/>

  <Link href="/layout/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>

  <Link href="/virtualMachines/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.virtualMachine; type=collection" rel="down"/>

  <Link href="/detachedDisks/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.detachedDisk; type=collection" rel="down"/>

</Links>

<Actions>

  <Action href="/virtualMachines/computePools/{compute pool identifier}/action/createVirtualMachine"
    name="createVirtualMachine" type="application/vnd.tmrk.cloud.createVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool identifier}/action/copyVirtualMachine"
    name="copyVirtualMachine" type="application/vnd.tmrk.cloud.copyVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool
    identifier}/action/copyIdenticalVirtualMachine" name="copyIdenticalVirtualMachine"
    type="application/vnd.tmrk.cloud.copyIdenticalVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool
    identifier}/action/createBlankVirtualMachine" name="createBlankVirtualMachine"
    type="application/vnd.tmrk.cloud.createBlankVirtualMachine"/>

  <Action href="/virtualMachines/computePools/{compute pool identifier}/action/importVirtualMachine"
    name="importVirtualMachine" type="application/vnd.tmrk.cloud.importVirtualMachine"/>

</Actions>

<VirtualMachines>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
```

```
      <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
      <Memory>
        <Unit>{unit of memory value}</Unit>
        <Value>{memory size}</Value>
      </Memory>
      <Storage>
        <Unit>{unit of storage value}</Unit>
        <Value>{storage size}</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
        pool identifier}" name="{operating system name}"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>{true | false}</PoweredOn>
      <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
    </VirtualMachine>
      ⋮
  </VirtualMachines>
  <Purchased>
    <Cpu>
      <Unit>{unit of processor value}</Unit>
      <Value>{processor purchased}</Value>
    </Cpu>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <Storage>
      <Unit>{unit of storage value}</Unit>
      <Value>{storage size}</Value>
    </Storage>
  </Purchased>
  <CpuBurst>
    <Actions>
      <Action href="/computePools/{compute pool identifier}/action/disableCpuBurst"
        name="disableCpuBurst" type="application/vnd.tmrk.cloud.task"/>
      <Action href="/computePools/{compute pool identifier}/action/enableCpuBurst"
        name="enableCpuBurst" type="application/vnd.tmrk.cloud.task" actionDisabled="{noAccess |
        disabled}"/>
    </Actions>
```

```
    <Status>{Disabled | Enabled}</Status>
  </CpuBurst>
  <MemoryBurst>
    <Actions>
      <Action href="/computePools/{compute pool identifier}/action/disableMemoryBurst"
        name="disableMemoryBurst" type="application/vnd.tmrk.cloud.task"/>
      <Action href="/computePools/{compute pool identifier}/action/enableMemoryBurst"
        name="enableMemoryBurst" type="application/vnd.tmrk.cloud.task" actionDisabled="{noAccess |
        disabled}"/>
    </Actions>
    <Status>{Disabled | Enabled}</Status>
  </MemoryBurst>
</ComputePool>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3922
  Content-Type: application/vnd.tmrk.cloud.computePool
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 21 Jun 2011 19:00:43 GMT
<ComputePool href="/computePools/2" name="Compute Pool New 1"
  type="application/vnd.tmrk.cloud.computePool" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/environments/organizations/1" type="application/vnd.tmrk.cloud.environment;
      type=collection" rel="up"/>
    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <Link href="/admin/catalog/organizations/1" type="application/vnd.tmrk.cloud.admin.catalogEntry;
      type=collection" rel="up"/>
    <Link href="/templates/computePools/2" type="application/vnd.tmrk.cloud.template; type=collection"
      rel="down"/>
    <Link href="/computePools/2/usage/memory" type="application/vnd.tmrk.cloud.computePoolMemoryUsage"
      rel="down"/>
    <Link href="/computePools/2/usage/cpu" type="application/vnd.tmrk.cloud.computePoolCpuUsage"
      rel="down"/>
    <Link href="/computePools/2/usage/storage"
      type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail" rel="down"/>
    <Link href="/computePools/2/resourceSummary"
      type="application/vnd.tmrk.cloud.computePoolResourceSummary" rel="down"/>
    <Link href="/computePools/2/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="down"/>
    <Link href="/operatingSystemFamilies/computePools/2"
      type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection" rel="down"/>
```

```
    <Link href="/layout/computePools/2" type="application/vnd.tmrk.cloud.deviceLayout" rel="down"/>

    <Link href="/virtualMachines/computePools/2" type="application/vnd.tmrk.cloud.virtualMachine;
      type=collection" rel="down"/>

    <Link href="/detachedDisks/computePools/2" type="application/vnd.tmrk.cloud.detachedDisk;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/computePools/2" name="edit" type="application/vnd.tmrk.cloud.computePool"/>

    <Action href="/virtualMachines/computePools/2/action/createVirtualMachine"
      name="createVirtualMachine" type="application/vnd.tmrk.cloud.createVirtualMachine"/>

    <Action href="/virtualMachines/computePools/2/action/copyVirtualMachine" name="copyVirtualMachine"
      type="application/vnd.tmrk.cloud.copyVirtualMachine"/>

    <Action href="/virtualMachines/computePools/1/action/copyIdenticalVirtualMachine"
      name="copyIdenticalVirtualMachine"
      type="application/vnd.tmrk.cloud.copyIdenticalVirtualMachine"/>

    <Action href="/virtualMachines/computePools/2/action/createBlankVirtualMachine"
      name="createBlankVirtualMachine" type="application/vnd.tmrk.cloud.createBlankVirtualMachine"/>

    <Action href="/virtualMachines/computePools/2/action/importVirtualMachine"
      name="importVirtualMachine" type="application/vnd.tmrk.cloud.importVirtualMachine"/>

  </Actions>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>NotDeployed</Status>

      <ProcessorCount>2</ProcessorCount>

      <Memory>

        <Unit>MB</Unit>

        <Value>1024</Value>

      </Memory>

      <Storage>

        <Unit>GB</Unit>

        <Value>120</Value>

      </Storage>

      <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>

    </VirtualMachine>

    <VirtualMachine href="/virtualMachines/2" name="VM2"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>Deployed</Status>

      <ProcessorCount>4</ProcessorCount>

      <Memory>
```

```
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/3" name="VM3"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
  <Purchased>
    <Cpu>
      <Unit>MHz</Unit>
      <Value>1</Value>
    </Cpu>
    <Memory>
      <Unit>GB</Unit>
      <Value>2</Value>
```

```
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>250</Value>
      </Storage>
    </Purchased>
    <CpuBurst>
      <Actions>
        <Action href="/computePools/2/action/disableCpuBurst" name="disableCpuBurst"
          type="application/vnd.tmrk.cloud.task" actionDisabled="disabled"/>
        <Action href="/computePools/2/action/enableCpuBurst" name="enableCpuBurst"
          type="application/vnd.tmrk.cloud.task"/>
      </Actions>
      <Status>Disabled</Status>
    </CpuBurst>
    <MemoryBurst>
      <Actions>
        <Action href="/computePools/2/action/disableMemoryBurst" name="disableMemoryBurst"
          type="application/vnd.tmrk.cloud.task" actionDisabled="disabled"/>
        <Action href="/computePools/2/action/enableMemoryBurst" name="enableMemoryBurst"
          type="application/vnd.tmrk.cloud.task"/>
      </Actions>
      <Status>Disabled</Status>
    </MemoryBurst>
  </ComputePool>
```

Return to *7.6 Compute Pool*.

Return to *7 Application Programming Interface Reference Guide*.

7.7 Resource

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Advance to *7.8 Template*.

A resource is processor, memory, storage, and bursting available within a compute pool.

7.7.1 Get Resources Summary List

The Get Resources Summary List call returns summary information regarding resource utilization in the compute pools defined in an environment.

Request

```
GET http://{Terremark URI}/computePools/environments/{environment identifier}/resourceSummaryList
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/environments/1/resourceSummaryList
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolResourceSummaryList href="/computePools/environments/{environment
  identifier}/resourceSummaryList" type="application/vnd.tmrk.cloud.computePoolResourceSummary;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <ComputePoolResourceSummary href="/computePools/{compute pool identifier}/resourceSummary"
```

```
type="application/vnd.tmrk.cloud.computePoolResourceSummary">
<Links>
  <Link href="/computePools/{compute pool identifier}"
    type="application/vnd.tmrk.cloud.computePool" rel="up"/>
</Links>
<StartTime>{measurement start time}</StartTime>
<EndTime>{measurement end time}</EndTime>
<Cpu>
  <Allocated>
    <Unit>{unit of processor allocated value}</Unit>
    <Value>{processor allocated}</Value>
  </Allocated>
  <Consumed>
    <Unit>{unit of processor consumed value}</Unit>
    <Value>{processor consumed}</Value>
  </Consumed>
  <Purchased>
    <Unit>{unit of processor purchased value}</Unit>
    <Value>{processor purchased}</Value>
  </Purchased>
  <Utilization>{utilization percentage}</Utilization>
</Cpu>
<Memory>
  <Allocated>
    <Unit>{unit of memory allocated value}</Unit>
    <Value>{memory allocated size}</Value>
  </Allocated>
  <Consumed>
    <Unit>{unit of memory consumed value}</Unit>
    <Value>{memory consumed size}</Value>
  </Consumed>
  <Purchased>
    <Unit>{unit of memory purchased value}</Unit>
    <Value>{memory purchased size}</Value>
  </Purchased>
  <Utilization>{utilization percentage}</Utilization>
</Memory>
```

```
    <Storage>
      <Purchased>
        <Unit>{unit of storage purchased value}</Unit>
        <Value>{storage purchased size}</Value>
      </Purchased>
      <Used>
        <Unit>{unit of storage used value}</Unit>
        <Value>{storage used size}</Value>
      </Used>
    </Storage>
    <VirtualMachines>
      <Count>{count of VM deployed}</Count>
      <PoweredOnCount>{count of VM running}</PoweredOnCount>
    </VirtualMachines>
  </ComputePoolResourceSummary>
    ⋮
</ComputePoolResourceSummaryList>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1739
  Content-Type: application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 14:36:45 GMT

<ComputePoolResourceSummaryList href="/computePools/environments/1/resourceSummaryList"
  type="application/vnd.tmrk.cloud.computePoolResourceSummary; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <ComputePoolResourceSummary href="/computePools/1/resourceSummary"
    type="application/vnd.tmrk.cloud.computePoolResourceSummary">

    <Links>

      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

    </Links>

    <StartTime>2011-09-14T17:04:12.7238726Z</StartTime>

    <EndTime>2011-09-15T17:04:12.7238726Z</EndTime>

    <Cpu>

      <Allocated>
```

```
        <Unit>GHz</Unit>
        <Value>8</Value>
      </Allocated>
      <Consumed>
        <Unit>GHz</Unit>
        <Value>1</Value>
      </Consumed>
      <Purchased>
        <Unit>GHz</Unit>
        <Value>5</Value>
      </Purchased>
      <Utilization>20</Utilization>
    </Cpu>
    <Memory>
      <Allocated>
        <Unit>GB</Unit>
        <Value>3</Value>
      </Allocated>
      <Consumed>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Consumed>
      <Purchased>
        <Unit>GB</Unit>
        <Value>20</Value>
      </Purchased>
      <Utilization>10</Utilization>
    </Memory>
    <Storage>
      <Purchased>
        <Unit>GB</Unit>
        <Value>100</Value>
      </Purchased>
      <Used>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Used>
```

```
    </Storage>
    <VirtualMachines>
      <Count>3</Count>
      <PoweredOnCount>2</PoweredOnCount>
    </VirtualMachines>
  </ComputePoolResourceSummary>
  <ComputePoolResourceSummary href="/computePools/2/resourceSUmmary"
    type="application/vnd.tmrk.cloud.computePoolResourceSummary">
    <Links>
      <Link href="/computePools/2" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
    </Links>
    <StartTime>2011-09-14T17:04:12.7238726Z</StartTime>
    <EndTime>2011-09-15T17:04:12.7238726Z</EndTime>
    <Cpu>
      <Allocated>
        <Unit>GHz</Unit>
        <Value>8</Value>
      </Allocated>
      <Consumed>
        <Unit>GHz</Unit>
        <Value>1</Value>
      </Consumed>
      <Purchased>
        <Unit>GHz</Unit>
        <Value>5</Value>
      </Purchased>
      <Utilization>20</Utilization>
    </Cpu>
    <Memory>
      <Allocated>
        <Unit>GB</Unit>
        <Value>3</Value>
      </Allocated>
      <Consumed>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Consumed>
```

```
      <Purchased>
        <Unit>GB</Unit>
        <Value>20</Value>
      </Purchased>
      <Utilization>10</Utilization>
    </Memory>
    <Storage>
      <Purchased>
        <Unit>GB</Unit>
        <Value>100</Value>
      </Purchased>
      <Used>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Used>
    </Storage>
    <VirtualMachines>
      <Count>3</Count>
      <PoweredOnCount>2</PoweredOnCount>
    </VirtualMachines>
  </ComputePoolResourceSummary>
</ComputePoolResourceSummaryList>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.2 Get Resources Summary

The Get Resources Summary call returns resource summary information regarding a specified compute pool defined in an environment.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/resourceSummary
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/resourceSummary
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolResourceSummary
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolResourceSummary href="/computePools/{compute pool identifier}/resourceSummary"
  type="application/vnd.tmrk.cloud.computePoolResourceSummary"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <Cpu>

    <Allocated>

      <Unit>{unit of processor allocated value}</Unit>

      <Value>{processor allocated}</Value>

    </Allocated>

    <Consumed>

      <Unit>{unit of processor consumed value}</Unit>

      <Value>{processor consumed}</Value>

    </Consumed>

    <Purchased>

      <Unit>{unit of processor purchased value}</Unit>

      <Value>{processor purchased}</Value>

    </Purchased>

    <Utilization>{utilization percentage}</Utilization>

  </Cpu>

  <Memory>

    <Allocated>

      <Unit>{unit of memory allocated value}</Unit>

      <Value>{memory allocated size}</Value>

    </Allocated>

    <Consumed>

      <Unit>{unit of memory consumed value}</Unit>

      <Value>{memory consumed size}</Value>

    </Consumed>
```

```
      <Purchased>
        <Unit>{unit of memory purchased value}</Unit>
        <Value>{memory purchased size}</Value>
      </Purchased>
      <Utilization>{utilization percentage}</Utilization>
    </Memory>
    <Storage>
      <Purchased>
        <Unit>{unit of storage purchased value}</Unit>
        <Value>{storage purchased size}</Value>
      </Purchased>
      <Used>
        <Unit>{unit of storage used value}</Unit>
        <Value>{storage used size}</Value>
      </Used>
    </Storage>
    <VirtualMachines>
      <Count>{count of VM deployed}</Count>
      <PoweredOnCount>{count of VM running}</PoweredOnCount>
    </VirtualMachines>
  </ComputePoolResourceSummary>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 798
    Content-Type: application/vnd.tmrk.cloud.computePoolResourceSummary
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 02 Jun 2011 19:13:33 GMT

  <ComputePoolResourceSummary href="/computePools/1/resourceSummary"
    type="application/vnd.tmrk.cloud.computePoolResourceSummary"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

    </Links>

    <StartTime>2011-05-26T14:31:45.429821Z</StartTime>

    <EndTime>2011-05-27T14:31:45.429821Z</EndTime>

    <Cpu>

      <Allocated>

        <Unit>GHz</Unit>
```

```
      <Value>8</Value>
    </Allocated>
    <Consumed>
      <Unit>GHz</Unit>
      <Value>1</Value>
    </Consumed>
    <Purchased>
      <Unit>GHz</Unit>
      <Value>5</Value>
    </Purchased>
    <Utilization>20</Utilization>
  </Cpu>
  <Memory>
    <Allocated>
      <Unit>GB</Unit>
      <Value>3</Value>
    </Allocated>
    <Consumed>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Consumed>
    <Purchased>
      <Unit>GB</Unit>
      <Value>20</Value>
    </Purchased>
    <Utilization>10</Utilization>
  </Memory>
  <Storage>
    <Purchased>
      <Unit>GB</Unit>
      <Value>100</Value>
    </Purchased>
    <Used>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Used>
  </Storage>
```

```
    <VirtualMachines>
      <Count>3</Count>
      <PoweredOnCount>2</PoweredOnCount>
    </VirtualMachines>
  </ComputePoolResourceSummary>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.3 Get Resources Usage Processor

The Get Resources Usage Processor call returns information regarding processor usage for a specified compute pool defined in an environment at five minute intervals for the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22, the end time 10:25.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolCpuUsage
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolCpuUsage href="/computePools/{compute pool identifier}/usage/cpu"
  type="application/vnd.tmrk.cloud.computePoolCpuUsage" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/usage/cpu/details?time={time}"
      type="application/vnd.tmrk.cloud.computePoolCpuUsageDetail" rel="down"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <CpuUsageDetailSummary>

    <CpuUsageDetail>
```

```
      <Time>{snapshot time}</Time>
      <Value>
        <Unit>{unit of processor used value}</Unit>
        <Value>{processor used}</Value>
      </Value>
    </CpuUsageDetail>
      ⋮
  </CpuUsageDetailSummary>
</ComputePoolCpuUsage>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 35816
  Content-Type: application/vnd.tmrk.cloud.computePoolCpuUsage
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 22 Jul 2011 19:32:05 GMT
<ComputePoolCpuUsage href="/computePools/1/usage/cpu"
  type="application/vnd.tmrk.cloud.computePoolCpuUsage" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
    <Link href="/computePools/1/usage/cpu/details?time=2011-07-21T19%3a27%3a02Z"
      type="application/vnd.tmrk.cloud.computePoolCpuUsageDetail" rel="down"/>
  </Links>
  <StartTime>2011-06-01T19:23:47.1461673Z</StartTime>
  <EndTime>2011-06-02T19:23:47.1461673Z</EndTime>
  <CpuUsageDetailSummary>
    <CpuUsageDetail>
      <Time>2011-06-01T19:23:47.1461673Z</Time>
      <Value>
        <Unit>MHz</Unit>
        <Value>50</Value>
      </Value>
    </CpuUsageDetail>
    <CpuUsageDetail>
    <Time>2011-06-01T19:28:47.1461673Z</Time>
      <Value>
        <Unit>MHz</Unit>
        <Value>36</Value>
```

```
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-01T19:33:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-01T19:38:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-01T19:43:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
  <Time>2011-06-01T19:48:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
    ⋮
  <!-- 23 hours additional usage data in 5 minute time slices -->
    ⋮
  <CpuUsageDetail>
    <Time>2011-06-02T18:58:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
```

```
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-02T19:03:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-02T19:08:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-02T19:13:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-02T19:18:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
  </CpuUsageDetail>
  <CpuUsageDetail>
    <Time>2011-06-02T19:23:47.1461673Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>36</Value>
    </Value>
```

```
    </CpuUsageDetail>
  </CpuUsageDetailSummary>
</ComputePoolCpuUsage>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.4 Get Resources Usage Processor Detail

The Get Resources Usage Processor Detail call returns information regarding processor usage for a specified compute pool defined in an environment at the time in the URL query part, a specified five minute time interval within the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22, the start time is 10:25 the previous day and the end time 10:25 today. The response includes usage of every virtual machine during the interval.

Note:

- The query part is required and the time passed as the parameter must precisely match a time in the preceding 24 hours. Times are on five minute intervals starting on the hour. Available times are in <Time> in the response to **Get Resources Usage Processor**.
- If the time in the parameter is within the 24 hour window as described above but not an available time (not a minute divisible by five), the call succeeds but returns no information.
- If the time in the parameter is not within the 24 hour window as described above, the call fails.

<Deleted> is applicable and appears only when virtual machines have been removed subsequent to the time of the snapshot.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu/details?time={time}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu/details?time=2011-06-
  02T21:30:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolCpuUsageDetail
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolCpuUsageDetail href="/computePools/{compute pool
  identifier}/usage/cpu/details?time={time}"
```

```
    type="application/vnd.tmrk.cloud.computePoolCpuUsageDetail"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
        rel="up"/>

      <Link href="/computePools/{compute pool identifier}/usage/cpu"
        type="application/vnd.tmrk.cloud.computePoolCpuUsage" rel="up"/>

    </Links>

    <Time>{time}</Time>

    <Value>

      <Unit>{unit of processor used value}</Unit>

      <Value>{processor used}</Value>

    </Value>

    <VirtualMachines>

      <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
        type="application/vnd.tmrk.cloud.virtualMachine">

        <Usage>

          <Unit>{unit of processor used value}</Unit>

          <Value>{processor used}</Value>

        </Usage>

        <Utilization>{utilization percentage}</Utilization>

        <Deleted>{true | false}</Deleted> <!-- only appears when VM removed after snapshot -->

      </VirtualMachine>

        ⋮

    </VirtualMachines>

  </ComputePoolCpuUsageDetail>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 1102
    Content-Type: application/vnd.tmrk.cloud.computePoolCpuUsageDetail
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 02 Jun 2011 22:26:19 GMT

  <ComputePoolCpuUsageDetail href="/computePools/1/usage/cpu/details?time=2011-06-02T21:30:00Z"
    type="application/vnd.tmrk.cloud.computePoolCpuUsageDetail"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

      <Link href="/computePools/1/usage/cpu" type="application/vnd.tmrk.cloud.computePoolCpuUsage"
        rel="up"/>

    </Links>
```

```
    <Time>2011-06-02T21:30:00Z</Time>
    <Value>
      <Unit>MHz</Unit>
      <Value>100</Value>
    </Value>
    <VirtualMachines>
      <VirtualMachine href="/virtualMachines/1" name="VM1"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Usage>
          <Unit>MHz</Unit>
          <Value>55</Value>
        </Usage>
        <Utilization>53</Utilization>
      </VirtualMachine>
      <VirtualMachine href="/virtualMachines/2" name="VM2"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Usage>
          <Unit>MHz</Unit>
          <Value>30</Value>
        </Usage>
        <Utilization>25</Utilization>
      </VirtualMachine>
      <VirtualMachine href="/virtualMachines/6" name="VM3"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Usage>
          <Unit>MB</Unit>
          <Value>15</Value>
        </Usage>
        <Utilization>53</Utilization>
        <Deleted>true</Deleted>
      </VirtualMachine>
    </VirtualMachines>
  </ComputePoolCpuUsageDetail>
```


Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.5 Get Resources Usage Memory

The Get Resources Usage Memory call returns information regarding memory usage for a specified compute pool defined in an environment at five minute intervals for the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22, the end time 10:25.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolMemoryUsage
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolMemoryUsage href="/computePools/{compute pool identifier}/usage/memory"
  type="application/vnd.tmrk.cloud.computePoolMemoryUsage" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/usage/memory/details?time={time}"
      type="application/vnd.tmrk.cloud.computePoolMemoryUsageDetail" rel="down"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <MemoryUsageDetailSummary>

    <MemoryUsageDetail>

      <Time>{snapshot time}</Time>

      <Value>

        <Unit>{unit of memory value}</Unit>

        <Value>{memory size}</Value>

      </Value>

    </MemoryUsageDetail>

      ⋮

  </MemoryUsageDetailSummary>
```

```
</ComputePoolMemoryUsage>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 37280
  Content-Type: application/vnd.tmrk.cloud.computePoolMemoryUsage
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 22 Jul 2011 19:33:49 GMT

<ComputePoolMemoryUsage href="/computePools/1/usage/memory"
  type="application/vnd.tmrk.cloud.computePoolMemoryUsage" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

    <Link href="/computePools/1/usage/memory/details?time=2011-07-21T19%3a28%3a49z"
      type="application/vnd.tmrk.cloud.computePoolMemoryUsageDetail" rel="down"/>

  </Links>

  <StartTime>2011-06-01T21:17:23.423084Z</StartTime>

  <EndTime>2011-06-02T21:17:23.423084Z</EndTime>

  <MemoryUsageDetailSummary>

    <MemoryUsageDetail>

      <Time>2011-06-01T21:17:23.423084Z</Time>

      <Value>

        <Unit>MB</Unit>

        <Value>459</Value>

      </Value>

    </MemoryUsageDetail>

    <MemoryUsageDetail>

      <Time>2011-06-01T21:22:23.423084Z</Time>

      <Value>

        <Unit>MB</Unit>

        <Value>459</Value>

      </Value>

    </MemoryUsageDetail>

    <MemoryUsageDetail>

      <Time>2011-06-01T21:27:23.423084Z</Time>

      <Value>

        <Unit>MB</Unit>

        <Value>459</Value>

      </Value>
```

```
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-01T21:32:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-01T21:37:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-01T21:42:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
      ⋮
    <!-- 23 hours additional usage data in 5 minute time slices -->
      ⋮
    <MemoryUsageDetail>
      <Time>2011-06-02T20:52:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-02T20:57:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
```

```
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-02T21:02:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-02T21:07:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-02T21:12:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
    <MemoryUsageDetail>
      <Time>2011-06-02T21:17:23.423084Z</Time>
      <Value>
        <Unit>MB</Unit>
        <Value>459</Value>
      </Value>
    </MemoryUsageDetail>
  </MemoryUsageDetailSummary>
</ComputePoolMemoryUsage>
```


Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.6 Get Resources Usage Memory Detail

The Get Resources Usage Memory Detail call returns information regarding memory usage for a specified compute pool defined in an environment at the time in the URL query part, a specified five minute time interval within the 24 hours ending one hour prior to the current time, rounded later. For example, if current time is 11:22, the start time is 10:25 the previous day and the end time 10:25 today. The response includes usage of every virtual machine during the interval.

Note:

- The query part is required and the time passed as the parameter must precisely match a time in the preceding 24 hours. Times are on five minute intervals starting on the hour. Available times are in <Time> in the response to **Get Resources Usage Memory**.
- If the time in the parameter is within the 24 hour window as described above but not an available time (not a minute divisible by five), the call succeeds but returns no information.
- If the time in the parameter is not within the 24 hour window as described above, the call fails.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory/details?time={time}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory/details?time=2011-06-
  02T21:30:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolMemoryUsageDetail
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolMemoryUsageDetail href="/computePools/{compute pool
  identifier}/usage/memory/details?time={time}"
  type="application/vnd.tmrk.cloud.computePoolMemoryUsageDetail"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/usage/memory"
      type="application/vnd.tmrk.cloud.computePoolMemoryUsage" rel="up"/>
```

```
    </Links>
    <Time>{time of snapshot}</Time>
    <Value>
      <Unit>{unit of memory used value}</Unit>
      <Value>{memory used}</Value>
    </Value>
    <VirtualMachines>
      <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Usage>
          <Unit>{unit of memory used value}</Unit>
          <Value>{memory used}</Value>
        </Usage>
        <Utilization>{utilization percentage}</Utilization>
        <Deleted>{true | false}</Deleted> <!-- only appears when VM removed after snapshot -->
      </VirtualMachine>
        ⋮
    </VirtualMachines>
  </ComputePoolMemoryUsageDetail>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 1114
    Content-Type: application/vnd.tmrk.cloud.computePoolMemoryUsageDetail
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 02 Jun 2011 22:01:02 GMT
  <ComputePoolMemoryUsageDetail href="/computePools/1/usage/memory/details?time=2011-06-02T21:30:00Z"
    type="application/vnd.tmrk.cloud.computePoolMemoryUsageDetail"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
      <Link href="/computePools/1/usage/memory" type="application/vnd.tmrk.cloud.computePoolMemoryUsage"
        rel="up"/>
    </Links>
    <Time>2011-06-02T21:30:00Z</Time>
    <Value>
      <Unit>MB</Unit>
      <Value>100</Value>
    </Value>
    <VirtualMachines>
```

```
    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Usage>
        <Unit>MB</Unit>
        <Value>55</Value>
      </Usage>
      <Utilization>53</Utilization>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/2" name="VM2"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Usage>
        <Unit>MB</Unit>
        <Value>30</Value>
      </Usage>
      <Utilization>25</Utilization>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Usage>
        <Unit>MB</Unit>
        <Value>15</Value>
      </Usage>
      <Utilization>53</Utilization>
      <Deleted>true</Deleted>
    </VirtualMachine>
  </VirtualMachines>
</ComputePoolMemoryUsageDetail>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.7 Get Resources Usage Storage

The Get Resources Usage Storage call returns information regarding current storage usage for a specified compute pool defined in an environment for active virtual machines and detached disks. The response includes usage of every active virtual machine and every detached disk.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/storage
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/storage
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolStorageUsageDetail
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolStorageUsageDetail href="/computePools/{compute pool identifier}/usage/storage"
  type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <Allocated>

    <Unit>{unit of storage allocated value}</Unit>

    <Value>{storage allocated on compute pool}</Value>

  </Allocated>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <DiskCount>{quantity of disks in VM}</DiskCount>

      <Allocated>

        <Unit>{unit of storage allocated value}</Unit>

        <Value>{storage allocated size}</Value>

      </Allocated>

    </VirtualMachine>

      ⋮

  </VirtualMachines>

  <DetachedDisks href="/detachedDisks/computePools/1" type="application/vnd.tmrk.cloud.detachedDisk;
    type=collection">

    <DetachedDisk href="/detachedDisks/1" name="DetachedDisk1"
      type="application/vnd.tmrk.cloud.detachedDisk">

      <Size>

        <Unit>GB</Unit>

        <Value>5</Value>

      </Size>
```

```
    </DetachedDisk>
      ⋮
  </DetachedDisks>
</ComputePoolStorageUsageDetail>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1481
  Content-Type: application/vnd.tmrk.cloud.computePoolStorageUsageDetail
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Dec 2011 16:47:01 GMT

<ComputePoolStorageUsageDetail href="/computePools/1/usage/storage"
  type="application/vnd.tmrk.cloud.computePoolStorageUsageDetail"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <Allocated>

    <Unit>GB</Unit>

    <Value>30</Value>

  </Allocated>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <DiskCount>1</DiskCount>

      <Allocated>

        <Unit>GB</Unit>

        <Value>3</Value>

      </Allocated>

    </VirtualMachine>

    <VirtualMachine href="/virtualMachines/2" name="VM2"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <DiskCount>1</DiskCount>

      <Allocated>

        <Unit>GB</Unit>

        <Value>7</Value>

      </Allocated>

    </VirtualMachine>

    <VirtualMachine href="/virtualMachines/6" name="VM6"
```

```
      type="application/vnd.tmrk.cloud.virtualMachine">
      <DiskCount>2</DiskCount>
      <Allocated>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Allocated>
    </VirtualMachine>
  </VirtualMachines>
  <DetachedDisks>
    <DetachedDisk href="/detachedDisks/1" name="Detached Disk1"
      type="application/vnd.tmrk.cloud.detachedDisk">
      <Size>
        <Unit>GB</Unit>
        <Value>2</Value>
      </Size>
    </DetachedDisk>
    <DetachedDisk href="/detachedDisks/2" name="Detached Disk2"
      type="application/vnd.tmrk.cloud.detachedDisk">
      <Size>
        <Unit>GB</Unit>
        <Value>3</Value>
      </Size>
    </DetachedDisk>
  </DetachedDisks>
</ComputePoolStorageUsageDetail>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.8 Get Resources Performance Statistics

The Get Resources Performance Statistics call returns references to obtain the individual performance statistics reports in a compute pool.

Request

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/performanceStatistics
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/performanceStatistics
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePoolPerformanceStatistics
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ComputePoolPerformanceStatistics href="/computePools/{compute pool
  identifier}/performanceStatistics"
  type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

    <Hourly>

      <Cpu href="/computePools/{compute pool identifier}/usage/cpu/performanceStatistics/hourly"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>

      <Memory href="/computePools/{compute pool identifier}/usage/memory/performanceStatistics/hourly"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>

    </Hourly>

    <Daily>

      <Cpu href="/computePools/{compute pool identifier}/usage/cpu/performanceStatistics/daily"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>

      <Memory href="/computePools/{compute pool identifier}/usage/memory/performanceStatistics/daily"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>

    </Daily>

</ComputePoolPerformanceStatistics>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 955
  Content-Type: application/vnd.tmrk.cloud.computePoolPerformanceStatistics
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 12 Jul 2011 17:53:29 GMT

<ComputePoolPerformanceStatistics href="/computePools/1/performanceStatistics"
  type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>
```

```
    <Hourly>
      <Cpu href="/computePools/1/usage/cpu/performanceStatistics/hourly"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>
      <Memory href="/computePools/1/usage/memory/performanceStatistics/hourly"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>
    </Hourly>
    <Daily>
      <Cpu href="/computePools/1/usage/cpu/performanceStatistics/daily"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>
      <Memory href="/computePools/1/usage/memory/performanceStatistics/daily"
        type="application/vnd.tmrk.cloud.performanceStatistics"/>
    </Daily>
  </ComputePoolPerformanceStatistics>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.9 Get Resources Performance Statistics Processor Daily

The Get Resources Performance Statistics Processor Daily call returns daily information regarding processor performance for a specified compute pool defined in an environment for the specified time period. The call retrieves information for each full day, 00:00:00Z to 23:59:59Z, available between requested times.

The call has two modes:

1. Default mode, no URL query part, returns statistics for the previous seven days.

   The default `endTime` is midnight the beginning of the current day and the default `startTime` is midnight seven days prior to the `endTime`. For example, if the call is made at 2011-07-12T14:48:00Z, then `startTime` is 2011-07-05T00:00:00Z and `endTime` is 2011-07-12T00:00:00Z.

2. Query mode, with a URL query part containing `startTime` and `endTime`, returns statistics for the complete days between requested dates.

   The desired date range is formed as a URL query and appended to the call URL. The date parameters, `startTime` and `endTime`, are name-value pairs separated by an equal sign (=). They are expressed in the UTC timezone in ISO8601 extended date and time format as discussed in *5.20 Date*. The date parameters are separated from each other with an ampersand (&) and from the rest of the URL by a question mark (?). For example: `?startTime=2011-06-20T00:00:00Z&endTime=2011-06-22T00:00:00Z`.

In query mode, if either parameter is missing, the default value is used. Only complete days are returned. For example, 2011-06-20T00:00:00Z to 2011-06-22T00:00:00Z returns information for 2 days: June 20 and June 21. Conversely, 2011-06-20T22:00:00Z to 2011-06-21T22:30:00Z returns no information as no complete days are in the requested interval.

Request

1. Default mode, no URL query part.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu/ …
  performanceStatistics/daily
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu/ …
  performanceStatistics/daily
```

2. Query mode, with a URL query part containing `startTime` and `endTime`.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu/ …
  performanceStatistics/daily?startTime={startTime}&endTime={endTime}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu/ …
  performanceStatistics/daily?startTime=2011-06-02T22:00:00Z&endTime=2011-06-04T22:00:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PerformanceStatistics href="/computePools/{compute pool
  identifier}/usage/cpu/performanceStatistics/daily?starttime={startTime}&endtime={endTime}"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <VirtualMachines>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <PerformanceStatistic>
```

```
      <Time>{daily time}</Time>
      <Used>
        <Unit>{unit of used value}</Unit>
        <Value>{used size}</Value>
      </Used>
    </PerformanceStatistic>
      ⋮
  </VirtualMachine>
    ⋮
  </VirtualMachines>
</PerformanceStatistics>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3720
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 09 Sep 2011 13:55:41 GMT

<PerformanceStatistics href="/computePools/1/usage/cpu/performanceStatistics/daily?starttime=2011-09-
  02+04%3a00%3a00z&amp;endtime=2011-09-08+04%3a00%3a00z"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

    <Link href="/computePools/1/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>2011-09-02T04:00:00Z</StartTime>

  <EndTime>2011-09-08T04:00:00Z</EndTime>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <PerformanceStatistic>

        <Time>2011-09-02T04:00:00Z</Time>

        <Used>

          <Unit>MHz</Unit>

          <Value>7383</Value>

        </Used>

      </PerformanceStatistic>

      <PerformanceStatistic>
```

```
      <Time>2011-09-03T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-04T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-05T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-06T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-07T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
```

```
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/2" name="VM2"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>2011-09-02T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-03T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-04T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-05T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-06T04:00:00Z</Time>
```

```
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-07T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/6" name="VM6"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>2011-09-02T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-03T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>7383</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
```

```
        <Time>2011-09-04T04:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>7383</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-05T04:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>7383</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-06T04:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>7383</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-07T04:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>7383</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-08T04:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>7383</Value>
        </Used>
      </PerformanceStatistic>
    </VirtualMachine>
  </VirtualMachines>
</PerformanceStatistics>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.10 Get Resources Performance Statistics Processor Hourly

The Get Resources Performance Statistics Processor Hourly call returns hourly information regarding processor performance for a specified compute pool defined in an environment for the specified time period. The call retrieves information for each full hour, nn:00:00Z to nn:59:59Z, available between requested times.

The call has two modes:

1. Default mode, no URL query part, returns statistics for the previous 24 hours.

   The default `endTime` is the end of the hour prior to the current time and the default `startTime` is the beginning of the hour 24 hours prior to the `endTime`. For example, if the call is made at 2011-07-12T14:48:00Z, then `startTime` is 2011-07-11T13:00:00Z and `endTime` is 2011-07-12T14:00:00Z.

2. Query mode, with a URL query part containing `startTime` and `endTime`, returns statistics for the complete days between requested dates.

   The desired date range is formed as a URL query and appended to the call URL. The date parameters, `startTime` and `endTime`, are name-value pairs separated by an equal sign (=). They are expressed in the UTC timezone in ISO8601 extended date and time format as discussed in *5.20 Date*. The date parameters are separated from each other with an ampersand (&) and from the rest of the URL by a question mark (?). For example: `?startTime=2011-06-20T00:00:00Z&endTime=2011-06-22T00:00:00Z`.

In query mode, if either parameter is missing, the default value is used. Only complete hours are returned. For example, 2011-06-22T06:00:00Z to 2011-06-22T08:00:00Z returns information for 2 hours: the 06:00 hour and the 07:00 hour. Conversely, 2011-06-21T14:10:00Z to 2011-06-21T15:50:00Z returns no information as no complete hours are in the requested interval.

Request

1. Default mode, no URL query part.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu/ …
  performanceStatistics/hourly
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu/ …
  performanceStatistics/hourly
```

2. Query mode, with a URL query part containing `startTime` and `endTime`.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/cpu/ …
```

```
  performanceStatistics/hourly?startTime={startTime}&endTime={endTime}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/cpu/ …
  performanceStatistics/hourly?startTime=2011-06-02T23:00:00Z&endTime=2011-06-03T01:00:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PerformanceStatistics href="/computePools/{compute pool
  identifier}/usage/cpu/performanceStatistics/hourly?starttime={startTime}&endtime={endTime}"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <VirtualMachines>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <PerformanceStatistic>

      <Time>{hourly time}</Time>

      <Used>

        <Unit>{unit of used value}</Unit>

        <Value>{used size}</Value>

      </Used>

    </PerformanceStatistic>

      ⋮

  </VirtualMachine>

    ⋮

  </VirtualMachines>

</PerformanceStatistics>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 10147
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 09 Sep 2011 14:06:19 GMT

<PerformanceStatistics href="/computePools/1/usage/cpu/performanceStatistics/hourly?starttime=2011-
  09-08+04%3a00%3a00z&amp;endtime=2011-09-09+03%3a00%3a00z"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

    <Link href="/computePools/1/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>2011-09-08T04:00:00Z</StartTime>

  <EndTime>2011-09-09T03:00:00Z</EndTime>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <PerformanceStatistic>

        <Time>2011-09-08T04:00:00Z</Time>

        <Used>

          <Unit>MHz</Unit>

          <Value>9939</Value>

        </Used>

      </PerformanceStatistic>

      <PerformanceStatistic>

        <Time>2011-09-08T05:00:00Z</Time>

        <Used>

          <Unit>MHz</Unit>

          <Value>9939</Value>

        </Used>

      </PerformanceStatistic>

      <PerformanceStatistic>

        <Time>2011-09-08T06:00:00Z</Time>

        <Used>

          <Unit>MHz</Unit>

          <Value>9939</Value>
```

```
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T07:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T08:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T09:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T10:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T11:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
```

```
<PerformanceStatistic>
  <Time>2011-09-08T12:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T13:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T14:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T15:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T16:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T17:00:00Z</Time>
```

```
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T18:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T19:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T20:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T21:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T22:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
```

```
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T23:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-09T00:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-09T01:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-09T02:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-09T03:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
```

```
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/2" name="VM2"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T05:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T06:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T07:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T08:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
```

```
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T09:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T10:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T11:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T12:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T13:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
```

```
<PerformanceStatistic>
  <Time>2011-09-08T14:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T15:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T16:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T17:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T18:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T19:00:00Z</Time>
```

```
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T20:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T21:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T22:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T23:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T00:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
```

```
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T01:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T02:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T03:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/6" name="VM6"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T05:00:00Z</Time>
      <Used>
```

```
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T06:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T07:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T08:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T09:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T10:00:00Z</Time>
    <Used>
      <Unit>MHz</Unit>
      <Value>9939</Value>
```

```
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T11:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T12:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T13:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T14:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T15:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
```

```
<PerformanceStatistic>
  <Time>2011-09-08T16:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T17:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T18:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T19:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T20:00:00Z</Time>
  <Used>
    <Unit>MHz</Unit>
    <Value>9939</Value>
  </Used>
</PerformanceStatistic>
<PerformanceStatistic>
  <Time>2011-09-08T21:00:00Z</Time>
```

```
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T22:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T23:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T00:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T01:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
        <Value>9939</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T02:00:00Z</Time>
      <Used>
        <Unit>MHz</Unit>
```

```
          <Value>9939</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-09T03:00:00Z</Time>
        <Used>
          <Unit>MHz</Unit>
          <Value>9939</Value>
        </Used>
      </PerformanceStatistic>
    </VirtualMachine>
  </VirtualMachines>
</PerformanceStatistics>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.11 Get Resources Performance Statistics Memory Daily

The Get Resources Performance Statistics Memory Daily call returns daily information regarding memory performance for a specified compute pool defined in an environment for the specified time period. The call retrieves information for each full day, 00:00:00Z to 23:59:59Z, available between requested times.

The call has two modes:

1. Default mode, no URL query part, returns statistics for the previous seven days.

   The default `endTime` is midnight the beginning of the current day and the default `startTime` is midnight seven days prior to the `endTime`. For example, if the call is made at 2011-07-12T14:48:00Z, then `startTime` is 2011-07-05T00:00:00Z and `endTime` is 2011-07-12T00:00:00Z.

2. Query mode, with a URL query part containing `startTime` and `endTime`, returns statistics for the complete days between requested dates.

   The desired date range is formed as a URL query and appended to the call URL. The date parameters, `startTime` and `endTime`, are name-value pairs separated by an equal sign (=). They are expressed in the UTC timezone in ISO8601 extended date and time format as discussed in *5.20 Date*. The date parameters are separated from each other with an ampersand (&) and from the rest of the URL by a question mark (?). For example: `?startTime=2011-06-20T00:00:00Z&endTime=2011-06-22T00:00:00Z`.

In query mode, if either parameter is missing, the default value is used. Only complete days are returned. For example, 2011-06-20T00:00:00Z to 2011-06-22T00:00:00Z returns information for 2 days: June 20 and June 21.

Conversely, 2011-06-20T22:00:00Z to 2011-06-21T22:30:00Z returns no information as no complete days are in the requested interval.

Request

1. Default mode, no URL query part.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory/ …
  performanceStatistics/daily
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory/ …
  performanceStatistics/daily
```

2. Query mode, with a URL query part containing `startTime` and `endTime`.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory/ …
  performanceStatistics/daily?startTime={startTime}&endTime={endTime}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory/ …
  performanceStatistics/daily?startTime=2011-06-02T22:00:00Z&endTime=2011-06-04T22:00:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PerformanceStatistics href="/computePools/{compute pool
  identifier}/usage/memory/performanceStatistics/daily?starttime={startTime}&endtime={endTime}"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <VirtualMachines>
```

```
  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>{daily time}</Time>
      <Used>
        <Unit>{unit of used value}</Unit>
        <Value>{used size}</Value>
      </Used>
    </PerformanceStatistic>
      ⋮
  </VirtualMachine>
    ⋮
  </VirtualMachines>
</PerformanceStatistics>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3702
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 09 Sep 2011 14:18:39 GMT

<PerformanceStatistics href="/computePools/1/usage/memory/performanceStatistics/daily?starttime=2011-
  09-02+04%3a00%3a00z&amp;endtime=2011-09-08+04%3a00%3a00z"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
    <Link href="/computePools/1/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>
  </Links>
  <StartTime>2011-09-02T04:00:00Z</StartTime>
  <EndTime>2011-09-08T04:00:00Z</EndTime>
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <PerformanceStatistic>
        <Time>2011-09-02T04:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
          <Value>8329</Value>
```

```
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-03T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-04T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-05T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-06T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-07T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
```

```
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/2" name="VM2"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
      <Time>2011-09-02T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-03T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-04T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-05T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
```

```
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-06T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
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    </PerformanceStatistic>
    <PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/6" name="VM6"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
```

```
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        <Value>8329</Value>
      </Used>
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      <Time>2011-09-05T04:00:00Z</Time>
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        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
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        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-07T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
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    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T04:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>8329</Value>
      </Used>
    </PerformanceStatistic>
```

```
    </VirtualMachine>
  </VirtualMachines>
</PerformanceStatistics>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.12 Get Resources Performance Statistics Memory Hourly

The Get Resources Performance Statistics Memory Hourly call returns hourly information regarding memory performance for a specified compute pool defined in an environment for the specified time period. The call retrieves information for each full hour, nn:00:00Z to nn:59:59Z, available between requested times.

The call has two modes:

1. Default mode, no URL query part, returns statistics for the previous 24 hours.

   The default `endTime` is the end of the hour prior to the current time and the default `startTime` is the beginning of the hour 24 hours prior to the `endTime`. For example, if the call is made at 2011-07-12T14:48:00Z, then `startTime` is 2011-07-11T13:00:00Z and `endTime` is 2011-07-12T14:00:00Z.

2. Query mode, with a URL query part containing `startTime` and `endTime`, returns statistics for the complete days between requested dates.

   The desired date range is formed as a URL query and appended to the call URL. The date parameters, `startTime` and `endTime`, are name-value pairs separated by an equal sign (=). They are expressed in the UTC timezone in ISO8601 extended date and time format as discussed in *5.20 Date*. The date parameters are separated from each other with an ampersand (&) and from the rest of the URL by a question mark (?). For example: `?startTime=2011-06-20T00:00:00Z&endTime=2011-06-22T00:00:00Z`.

In query mode, if either parameter is missing, the default value is used. Only complete hours are returned. For example, 2011-06-22T06:00:00Z to 2011-06-22T08:00:00Z returns information for 2 hours: the 06:00 hour and the 07:00 hour. Conversely, 2011-06-21T14:10:00Z to 2011-06-21T15:50:00Z returns no information as no complete hours are in the requested interval.

Request

1. Default mode, no URL query part.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory/ …
  performanceStatistics/hourly
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory/ …
  performanceStatistics/hourly
```

2. Query mode, with a URL query part containing `startTime` and `endTime`.

```
GET http://{Terremark URI}/computePools/{compute pool identifier}/usage/memory/ …
  performanceStatistics/hourly?startTime={startTime}&endTime={endTime}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/computePools/1/usage/memory/ …
  performanceStatistics/hourly?startTime=2011-06-02T23:00:00Z&endTime=2011-06-03T01:00:00Z
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.performanceStatistics
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PerformanceStatistics href="/computePools/{compute pool
  identifier}/usage/memory/performanceStatistics/hourly?starttime={startTime}&endtime={endTime}"
  type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/computePools/{compute pool identifier}/performanceStatistics"
      type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

  </Links>

  <StartTime>{measurement start time}</StartTime>

  <EndTime>{measurement end time}</EndTime>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <PerformanceStatistic>

        <Time>{hourly time}</Time>

        <Used>

          <Unit>{unit of used value}</Unit>

          <Value>{used size}</Value>

        </Used>

      </PerformanceStatistic>

        ⋮

    </VirtualMachine>

      ⋮
```

```
    </VirtualMachines>
  </PerformanceStatistics>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 10078
    Content-Type: application/vnd.tmrk.cloud.performanceStatistics
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 09 Sep 2011 14:27:08 GMT

  <PerformanceStatistics
    href="/computePools/1/usage/memory/performanceStatistics/hourly?starttime=2011-09-
    08+04%3a00%3a00z&amp;endtime=2011-09-09+03%3a00%3a00z"
    type="application/vnd.tmrk.cloud.performanceStatistics" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">

    <Links>

      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

      <Link href="/computePools/1/performanceStatistics"
        type="application/vnd.tmrk.cloud.computePoolPerformanceStatistics" rel="up"/>

    </Links>

    <StartTime>2011-09-08T04:00:00Z</StartTime>

    <EndTime>2011-09-09T03:00:00Z</EndTime>

    <VirtualMachines>

      <VirtualMachine href="/virtualMachines/1" name="VM1"
        type="application/vnd.tmrk.cloud.virtualMachine">

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          <Time>2011-09-08T04:00:00Z</Time>

          <Used>

            <Unit>MB</Unit>

            <Value>4738</Value>

          </Used>

        </PerformanceStatistic>

        <PerformanceStatistic>

          <Time>2011-09-08T05:00:00Z</Time>

          <Used>

            <Unit>MB</Unit>

            <Value>4738</Value>

          </Used>

        </PerformanceStatistic>

        <PerformanceStatistic>

          <Time>2011-09-08T06:00:00Z</Time>
```

```
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    </PerformanceStatistic>
    <PerformanceStatistic>
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      </Used>
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    <PerformanceStatistic>
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        <Unit>MB</Unit>
        <Value>4738</Value>
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    <PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
        <Value>4738</Value>
      </Used>
    </PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
        <Value>4738</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T11:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
```

```
      <Value>4738</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T12:00:00Z</Time>
    <Used>
      <Unit>MB</Unit>
      <Value>4738</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T13:00:00Z</Time>
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  </PerformanceStatistic>
  <PerformanceStatistic>
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    <Used>
      <Unit>MB</Unit>
      <Value>4738</Value>
    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T16:00:00Z</Time>
    <Used>
      <Unit>MB</Unit>
      <Value>4738</Value>
    </Used>
```

```
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        </Used>
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      <PerformanceStatistic>
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        <Used>
          <Unit>MB</Unit>
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        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-08T19:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
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      </PerformanceStatistic>
      <PerformanceStatistic>
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        <Used>
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      <PerformanceStatistic>
```

```
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    <PerformanceStatistic>
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      <Used>
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      </Used>
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    <PerformanceStatistic>
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      <Used>
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      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-09T03:00:00Z</Time>
      <Used>
```

```
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      </Used>
    </PerformanceStatistic>
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    type="application/vnd.tmrk.cloud.virtualMachine">
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      <Used>
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    </PerformanceStatistic>
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```

```
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```

```
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```

```
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```

```
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    </PerformanceStatistic>
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        <Unit>MB</Unit>
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      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
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      <Used>
        <Unit>MB</Unit>
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    </PerformanceStatistic>
  </VirtualMachine>
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    type="application/vnd.tmrk.cloud.virtualMachine">
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```

```
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</PerformanceStatistic>
<PerformanceStatistic>
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```

```
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      <Time>2011-09-08T11:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>4738</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T12:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>4738</Value>
      </Used>
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      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T14:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
        <Value>4738</Value>
      </Used>
    </PerformanceStatistic>
    <PerformanceStatistic>
      <Time>2011-09-08T15:00:00Z</Time>
      <Used>
        <Unit>MB</Unit>
```

```
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    </Used>
  </PerformanceStatistic>
  <PerformanceStatistic>
    <Time>2011-09-08T16:00:00Z</Time>
    <Used>
      <Unit>MB</Unit>
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    </Used>
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  <PerformanceStatistic>
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    <Used>
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    </Used>
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  <PerformanceStatistic>
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    <Used>
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```

```
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        </Used>
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      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-08T23:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
          <Value>4738</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-09T00:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
          <Value>4738</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-09T01:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
          <Value>4738</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
```

```
        <Time>2011-09-09T02:00:00Z</Time>
        <Used>
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          <Value>4738</Value>
        </Used>
      </PerformanceStatistic>
      <PerformanceStatistic>
        <Time>2011-09-09T03:00:00Z</Time>
        <Used>
          <Unit>MB</Unit>
          <Value>4738</Value>
        </Used>
      </PerformanceStatistic>
    </VirtualMachine>
  </VirtualMachines>
</PerformanceStatistics>
```


Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.13 Action Resources Enable Burst Processor

The Action Resources Enable Burst Processor call enables processor burst mode for a specified compute pool. If successful, the call returns the task that enabled the processor burst mode.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
compute pool identifier = 1	Error: Already bursting
compute pool identifier = 2	Enable burst
compute pool identifier> 2 and < 99	Error: Feature disabled

Condition	Outcome
compute pool identifier = 99	Error: Unauthorized

Request

```
POST http://{Terremark URI}/computePools/{compute pool identifier}/action/enableCpuBurst
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/computePools/2/action/enableCpuBurst
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.computePool
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Processor Burst</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 450
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 31 May 2011 13:47:11 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Processor Burst</Operation>
```

```
    <Status>Queued</Status>
    <ImpactedItem href="/computePools/2" type="application/vnd.tmrk.cloud.computePool"/>
    <StartTime>2011-05-31T13:47:11.6938241Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.14 Action Resources Enable Burst Memory

The Action Resources Enable Burst Memory call enables memory burst mode for a specified compute pool. If successful, the call returns the task that enabled the memory burst mode.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
compute pool identifier = 1	Error: Already bursting
compute pool identifier = 2	Enable burst
compute pool identifier> 2 and < 99	Error: Feature disabled
compute pool identifier = 99	Error: Unauthorized

Request

```
POST http://{Terremark URI}/computePools/{compute pool identifier}/action/enableMemoryBurst
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/computePools/2/action/enableMemoryBurst
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Memory Burst</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 453
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 31 May 2011 13:58:19 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Memory Burst</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/computePools/2" type="application/vnd.tmrk.cloud.computePool"/>

  <StartTime>2011-05-31T13:58:19.5078241Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.15 Action Resources Disable Burst Processor

The Action Resources Disable Burst Processor call disables processor burst mode for a specified compute pool. If successful, the call returns the task that disabled the processor burst mode.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
compute pool identifier = 1	Disable burst
compute pool identifier = 2	Error: Not bursting
compute pool identifier> 2 and < 99	Error: Feature disabled
compute pool identifier = 99	Error: Unauthorized

Request

```
POST http://{Terremark URI}/computePools/{compute pool identifier}/action/disableCpuBurst
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/computePools/1/action/disableCpuBurst
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Disable Processor Burst</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
```

```
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
  <ErrorMessage>{error message}</ErrorMessage>
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 451
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 22:50:38 GMT
<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Disable Processor Burst</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/computePools/1" type="application/vnd.tmrk.cloud.computePool"/>
  <StartTime>2011-05-27T22:50:38.1151072Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.7.16 Action Resources Disable Burst Memory

The Action Resources Disable Burst Memory call disables memory burst mode for a specified compute pool. If successful, the call returns the task that disabled the memory burst mode.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
compute pool identifier = 1	Disable burst
compute pool identifier = 2	Error: Not bursting
compute pool identifier> 2 and < 99	Error: Feature disabled
compute pool identifier = 99	Error: Unauthorized

Request

```
POST http://{Terremark URI}/computePools/{compute pool identifier}/action/disableMemoryBurst
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/computePools/1/action/disableMemoryBurst
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Disable Memory Burst</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
```

```
  Content-Length: 454
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 31 May 2011 14:00:02 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Disable Memory Burst</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/computePools/1" type="application/vnd.tmrk.cloud.computePool"/>

  <StartTime>2011-05-31T14:00:02.5888241Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.7 Resource*.

Return to *7 Application Programming Interface Reference Guide*.

7.8 Template

7.8.1 Get Templates 392

7.8.2 Get Templates by ID 394

Advance to *7.9 Virtual Machine*.

This section contains the calls for the Templates entity.

Return to *7 Application Programming Interface Reference Guide*.

7.8.1 Get Templates

The Get Templates call returns information regarding templates defined in a compute pool.

Request

```
GET http://{Terremark URI}/templates/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/templates/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.template; type=collection
```

```
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Templates href="/templates/computePools/{compute pool identifier}"
  type="application/vnd.tmrk.cloud.template; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <Families>

    <Family>

      <Name>{template operating system family}</Name>

      <Categories>

        <Category>

          <Name>{template category}</Name>

          <OperatingSystems>

            <OperatingSystem>

              <Name>{operating system name}</Name>

              <Templates>

                <Template href="/templates/{template identifier}/computePools/{compute pool identifier}"
                  name="{template name}" type="application/vnd.tmrk.cloud.template"/>

                  ⋮

              </Templates>

            </OperatingSystem>

              ⋮

          </OperatingSystems>

        </Category>

          ⋮

      </Categories>

    </Family>

      ⋮

  </Families>

</Templates>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 727
  Content-Type: application/vnd.tmrk.cloud.template; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
  Date: Thu, 02 Jun 2011 18:48:42 GMT
<Templates href="/templates/computePools/1" type="application/vnd.tmrk.cloud.template;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
  </Links>
  <Families>
    <Family>
      <Name>Windows Templates</Name>
      <Categories>
        <Category>
          <Name>Win</Name>
          <OperatingSystems>
            <OperatingSystem>
              <Name>Windows</Name>
              <Templates>
                <Template href="/templates/1/computePools/1" name="Win 32 bit"
                  type="application/vnd.tmrk.cloud.template"/>
                <Template href="/templates/2/computePools/1" name="Win 64 bit"
                  type="application/vnd.tmrk.cloud.template"/>
              </Templates>
            </OperatingSystem>
          </OperatingSystems>
        </Category>
      </Categories>
    </Family>
  </Families>
</Templates>
```

Return to *7.8 Template*.

Return to *7 Application Programming Interface Reference Guide*.

7.8.2 Get Templates by ID

The Get Templates by ID call returns information regarding a specified template defined in a compute pool.

<LicensedSoftware> is not present on templates without licensing costs.

Request

```
GET http://{Terremark URI}/templates/{template identifier}/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/templates/2/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.template
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Template href="/templates/{template identifier}/computePools/{compute pool identifier}"
  name="{template name}" type="application/vnd.tmrk.cloud.template"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>

  <Description>{textual description}</Description>

  <Storage>

    <Size>

      <Unit>{unit of storage value}</Unit>

      <Value>{storage size}</Value>

    </Size>

    <HourlyCost>{hourly cost}</HourlyCost>

  </Storage>

  <NetworkAdapters>{count of network adapters}</NetworkAdapters>

  <Customization>

    <Type>{operating system family}</Type>

    <CanPowerOn>{true | false}</CanPowerOn>

    <PasswordRequired>{true | false}</PasswordRequired>

    <SshKeyRequired>{true | false}</SshKeyRequired>

  </Customization>

  <LicensedSoftware>

    <LicenseProvider>{service provider}</LicenseProvider>

    <HourlyLicensedSoftware>

      <Software>

        <Description>{textual description}</Description>
```

```
        <ProcessorCountPerUnit>{processor count of software license}</ProcessorCountPerUnit>
        <CostPerUnit>{cost per unit of software license}</CostPerUnit>
      </Software>
    </HourlyLicensedSoftware>
    <MonthlyLicensedSoftware>
      <Software>
        <Description>{textual description}</Description>
        <ProcessorCountPerUnit>{processor count of software license}</ProcessorCountPerUnit>
        <CostPerUnit>{cost per unit of software license}</CostPerUnit>
      </Software>
    </MonthlyLicensedSoftware>
      ⋮
  </LicensedSoftware>
</Template>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 766
  Content-Type: application/vnd.tmrk.cloud.template
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 21 Jun 2011 14:44:32 GMT

<Template href="/templates/2/computePools/1" name="Template 2"
  type="application/vnd.tmrk.cloud.template" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
  </Links>
  <OperatingSystem href="/operatingSystems/linux/computePools/1" name="Linux"
    type="application/vnd.tmrk.cloud.operatingSystem"/>
  <Description>Templ. description</Description>
  <Storage>
    <Size>
      <Unit>GB</Unit>
      <Value>20</Value>
    </Size>
    <HourlyCost>0</HourlyCost>
  </Storage>
  <NetworkAdapters>1</NetworkAdapters>
  <Customization>
    <Type>Linux</Type>
```

```
      <CanPowerOn>true</CanPowerOn>
      <PasswordRequired>false</PasswordRequired>
      <SshKeyRequired>true</SshKeyRequired>
    </Customization>
  </Template>
```

Return to *7.8 Template*.

Return to *7 Application Programming Interface Reference Guide*.

7.9 Virtual Machine

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Advance to *7.10 Operating System Family / Operating System*.

This section contains the calls for the Virtual Machine entity.

Return to *7 Application Programming Interface Reference Guide*.

7.9.1 Get Virtual Machines

The Get Virtual Machines call returns information regarding virtual machines defined in a compute pool.

<Tasks> refers to tasks regarding the virtual machine. Only the most recent tasks, up to twenty, are returned. Use the `href` to retrieve the complete list of tasks.

<CompletedTime> is not present on tasks Queued or Running.

<TotalCount> refers to the total number of tasks regarding this entity.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Links>, <Actions>, <Tasks>, and <Status>.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **Mounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 2 = 0	Linux configuration (SSH key required)
virtual machine identifier mod 2 != 0	Windows configuration (password required)
virtual machine identifier = not(38 or 46)	Operating system Asian Linux
virtual machine identifier = 38	Operating system Windows 7
virtual machine identifier = 46	Operating system DOS
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 10 = 0	Virtual machine status `Orphaned`
virtual machine identifier mod 5 = 0	Virtual machine status `CopyInProgress`
virtual machine identifier mod 4 = 0	Virtual machine status `NotDeployed`
virtual machine identifier mod 3 = 0	Virtual machine status `TaskInProgress`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier mod 7 = 0	Has tasks running
virtual machine identifier = 1 or not (mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	VMware Tools status `Current`
virtual machine identifier mod 5 = 0	VMware Tools status `NotInstalled`
virtual machine identifier mod 4 = 0	VMware Tools status `NotRunning`
virtual machine identifier mod 3 = 0	VMware Tools status `OutOfDate`
virtual machine identifier mod 4 = 0	VMware Tools media `Mounted`

Request

```
GET http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine; type=collection
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachines href="/virtualMachines/computePools/{compute pool identifier}"
  type="application/vnd.tmrk.cloud.virtualMachine; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" name="Compute Pool 1"
      type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

    <Memory>

      <Unit>{unit of memory value}</Unit>

      <Value>{memory size}</Value>

    </Memory>

    <Storage>

      <Unit>{unit of storage value}</Unit>

      <Value>{storage size}</Value>

    </Storage>

    <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
      identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>

    <PoweredOn>{true | false}</PoweredOn>

    <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>

  </VirtualMachine>

    ⋮

</VirtualMachines>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3441
  Content-Type: application/vnd.tmrk.cloud.virtualMachine; type=collection
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 02 Nov 2011 16:26:06 GMT

<VirtualMachine href="/virtualMachines/computePools/1"
  type="application/vnd.tmrk.cloud.virtualMachine; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <VirtualMachine href="/virtualMachines/1" name="VM1"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <Status>NotDeployed</Status>

    <ProcessorCount>2</ProcessorCount>

    <Memory>

      <Unit>MB</Unit>

      <Value>1024</Value>

    </Memory>

    <Storage>

      <Unit>GB</Unit>

      <Value>120</Value>

    </Storage>

    <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003 Enterprise
      Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>

  </VirtualMachine>

  <VirtualMachine href="/virtualMachines/2" name="VM2"
    type="application/vnd.tmrk.cloud.virtualMachine">

    <Status>Deployed</Status>

    <ProcessorCount>4</ProcessorCount>

    <Memory>

      <Unit>MB</Unit>

      <Value>2048</Value>

    </Memory>

    <Storage>

      <Unit>GB</Unit>

      <Value>10</Value>

    </Storage>

    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
```

```
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/3" name="VM3"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.2 Get Virtual Machines by ID

The Get Virtual Machines by ID call returns information regarding a specified virtual machine defined in an environment.

<Tasks> refers to tasks regarding the virtual machine. Only the most recent tasks, up to twenty, are returned. Use the `href` to retrieve the complete list of tasks.

<CompletedTime> is not present on tasks Queued or Running.

<TotalCount> refers to the total number of tasks regarding this entity.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.

- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Links>, <Actions>, <Tasks>, and <Status>.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 2 = 0	Linux configuration (SSH key required)
virtual machine identifier mod 2 != 0	Windows configuration (password required)
virtual machine identifier = not(38 or 46)	Operating system Asian Linux
virtual machine identifier = 38	Operating system Windows 7
virtual machine identifier = 46	Operating system DOS
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 10 = 0	Virtual machine status `Orphaned`
virtual machine identifier mod 5 = 0	Virtual machine status `CopyInProgress`
virtual machine identifier mod 4 = 0	Virtual machine status `NotDeployed`
virtual machine identifier mod 3 = 0	Virtual machine status `TaskInProgress`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier mod 7 = 0	Has tasks running
virtual machine identifier = 1 or not (mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	VMware Tools status `Current`
virtual machine identifier mod 5 = 0	VMware Tools status `NotInstalled`
virtual machine identifier mod 4 = 0	VMware Tools status `NotRunning`
virtual machine identifier mod 3 = 0	VMware Tools status `OutOfDate`
virtual machine identifier mod 4 = 0	VMware Tools media `Mounted`
virtual machine identifier = 11	Retry operation pending

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/environments/{environment identifier}" name="{environment name}"
```

```
    type="application/vnd.tmrk.cloud.environment" rel="up"/>

  <Link href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

  <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
    type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>

  <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
    type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

  <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
    type="application/octet-stream" rel="down"/>

</Links>

<Actions>

  <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
    | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

  <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
    name="tools:unmount" actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
    name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
    type="application/octet-stream"/>

</Actions>

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>
```

```
    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Description>{textual description}</Description>

<Tags>

  <Tag>{user-defined tag}</Tag>

    ⋮

</Tags>

<Layout>

  <Row href="/layoutRows/{row identifier}" name="{row name}"
    type="application/vnd.tmrk.cloud.layoutRow"/>

  <Group href="/layoutGroups/{group identifier}" name="{group name}"
    type="application/vnd.tmrk.cloud.layoutGroup"/>

</Layout>

<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
  type="application/vnd.tmrk.cloud.networkHost"/>

<Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

<PoweredOn>{true | false}</PoweredOn>

<HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
  type="application/vnd.tmrk.cloud.virtualMachineHardware">

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

    <Action href="/virtualMachines/{virtual machine
      identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
      type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine
      identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
      type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <Disks>
```

```
      <Disk>
        <Index>{disk index}</Index>
        <Size>
          <Unit>{unit of disk size value}</Unit>
          <Value>{disk size}</Value>
        </Size>
        <Name>{disk name}</Name>
      </Disk>
        ⋮
    </Disks>
    <Nics>
      <Nic>
        <UnitNumber>{network interface card number}</UnitNumber>
        <Name>{network interface card name}</Name>
        <MacAddress>{network interface card MAC address}</MacAddress>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <NetworkType>{Dmz | Internal}</NetworkType>
        </Network>
      </Nic>
        ⋮
    </Nics>
  </HardwareConfiguration>
  <IpAddresses>
    <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
      <Actions>
        <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
          type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
      </Actions>
      <Networks>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <IpAddresses>
            <IpAddress>{assigned IP address}</IpAddress>
              ⋮
          </IpAddresses>
        </Network>
```

```
        ⋮
      </Networks>
    </AssignedIpAddresses>
    <DetectedIpAddresses>
      <IpAddress>{detected IP address}</IpAddress>
        ⋮
    </DetectedIpAddresses>
  </IpAddresses>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
  <MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>
  <CustomizationPending>{true | false}</CustomizationPending>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3441
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 31 May 2011 17:35:21 GMT
<VirtualMachine href="/virtualMachines/1" name="Virtual Machine 1"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>
    <Link href="/virtualMachines/1/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
      type=collection" rel="down"/>
    <Link href="/virtualMachines/1/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
    <Link href="/virtualMachines/1/guest/action/files" type="application/octet-stream" rel="down"/>
  </Links>
  <Actions>
    <Action href="/virtualMachines/1" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"/>
```

```
    <Action href="/virtualMachines/1/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

    <Action href="/virtualMachines/1" name="remove" actionDisabled="disabled"/>

    <Action href="/virtualMachines/1/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>

    <Action href="/virtualMachines/1/action/powerOff" name="power:powerOff"/>

    <Action href="/virtualMachines/1/action/reboot" name="power:reboot"/>

    <Action href="/virtualMachines/1/action/shutdown" name="power:shutdown"/>

    <Action href="/virtualMachines/1/action/powerOn" name="power:powerOn" actionDisabled="disabled"/>

    <Action href="/virtualMachines/1/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/1/tools/action/unmount" name="tools:unmount"
      actionDisabled="disabled"/>

    <Action href="/virtualMachines/1/guest/action/createProcess" name="createGuestProcess"
      type="application/vnd.tmrk.cloud.guest.process"/>

    <Action href="/virtualMachines/1/guest/action/files" name="createFile" type="application/octet-
      stream"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">

      <Operation>CreateVirtualMachine</Operation>

      <Status>Complete</Status>

      <ImpactedItem href="/virtualMachines/computePools/1/action/createVirtualMachine"
        name="VirtualMachine1" type="application/vnd.tmrk.cloud.createVirtualMachine"/>

      <StartTime>2011-06-21T15:00:32.357</StartTime>

      <CompletedTime>2011-06-21T15:02:32.357</CompletedTime>

      <Notes>Some notes about the operation.</Notes>

      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <TotalCount>40</TotalCount>

  </Tasks>

  <Description>This is my VM</Description>

  <Tags>

    <Tag>Tag 1</Tag>

    <Tag>Tag 2</Tag>

  </Tags>

  <Layout>

    <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>

    <Group href="/layoutGroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>

  </Layout>
```

```
<NetworkHost href="/networkHosts/1" name="VirtualMachine1"
 type="application/vnd.tmrk.cloud.networkHost"/>

<Status>Deployed</Status>

<PoweredOn>true</PoweredOn>

<HardwareConfiguration href="/virtualMachines/1/hardwareConfiguration"
 type="application/vnd.tmrk.cloud.virtualMachineHardware">

 <Actions>

  <Action href="/virtualMachines/1/hardwareConfiguration" name="edit"
   type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

  <Action href="/virtualMachines/1/hardwareConfiguration/disks/actions/detach" name="detachDisks"
   type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="disabled"/>

  <Action href="/virtualMachines/1/hardwareConfiguration/disks/actions/attach" name="attachDisks"
   type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="disabled"/>

 </Actions>

 <ProcessorCount>2</ProcessorCount>

 <Memory>

  <Unit>MB</Unit>

  <Value>1024</Value>

 </Memory>

 <Disks>

  <Disk>

   <Index>0</Index>

   <Size>

    <Unit>GB</Unit>

    <Value>2</Value>

   </Size>

   <Name>Disk 1</Name>

  </Disk>

  <Disk>

   <Index>1</Index>

   <Size>

    <Unit>GB</Unit>

    <Value>10</Value>

   </Size>

   <Name>Disk 2</Name>

  </Disk>

 </Disks>

 <Nics>

  <Nic>
```

```
      <UnitNumber>0</UnitNumber>
      <Name>Network Adapter1</Name>
      <MacAddress>00:00:00:00:00:00:01</MacAddress>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Nic>
    <Nic>
      <UnitNumber>1</UnitNumber>
      <Name>Network Adapter2</Name>
      <MacAddress>00:00:00:00:00:00:02</MacAddress>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Nic>
  </Nics>
</HardwareConfiguration>
<IpAddresses>
  <AssignedIpAddresses href="/virtualMachines/1/assignedIps"
    type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
    <Actions>
      <Action href="/virtualMachines/1/assignedIps" name="edit"
        type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
    </Actions>
    <Networks>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>10.0.4.34</IpAddress>
          <IpAddress>10.0.4.37</IpAddress>
        </IpAddresses>
      </Network>
    </Networks>
  </AssignedIpAddresses>
  <DetectedIpAddresses>
    <IpAddress>10.0.4.34</IpAddress>
    <IpAddress>10.0.4.37</IpAddress>
    <IpAddress>10.0.4.38</IpAddress>
  </DetectedIpAddresses>
```

```
    </IpAddresses>
    <OperatingSystem href="/operatingSystems/Asianux32bit/computePools/1" name="Asianux 32-bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <ToolsStatus>Current</ToolsStatus>
    <MediaStatus>Unmounted</MediaStatus>
    <CustomizationPending>false</CustomizationPending>
  </VirtualMachine>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.3 Get Virtual Machines Hardware Configuration

The Get Virtual Machines Hardware Configuration call returns information regarding the hardware configuration of a specified virtual machine in a compute pool.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 2 = 0	Linux configuration (SSH key required)
virtual machine identifier mod 2 != 0	Windows configuration (password required)

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/hardwareConfiguration
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/1/hardwareConfiguration
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachineHardware
  x-tmrk-currentuser: /admin/users/{user identifier}
```

```
  x-tmrk-token: {token}
  Date: {timestamp of response}

<HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
  type="application/vnd.tmrk.cloud.virtualMachineHardware" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

    <Action href="/virtualMachines/{virtual machine
      identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
      type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine
      identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
      type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <Disks>

    <Disk>

      <Index>{disk index}</Index>

      <Size>

        <Unit>{unit of disk size value}</Unit>

        <Value>{disk size}</Value>

      </Size>

      <Name>{disk name}</Name>

    </Disk>

      ⋮

  </Disks>

  <Nics>

    <Nic>

      <UnitNumber>{network interface card number}</UnitNumber>

      <Name>{network interface card name}</Name>

      <MacAddress>{network interface card MAC address}</MacAddress>

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">

        <NetworkType>{Dmz | Internal}</NetworkType>

      </Network>
```

```
    </Nic>
      ⋮
  </Nics>
</HardwareConfiguration>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1126
  Content-Type: application/vnd.tmrk.cloud.virtualMachineHardware
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 16:41:50 GMT

<HardwareConfiguration href="/virtualMachines/1/hardwareConfiguration"
  type="application/vnd.tmrk.cloud.virtualMachineHardware" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Actions>

    <Action href="/virtualMachines/1/hardwareConfiguration" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

    <Action href="/virtualMachines/1/hardwareConfiguration/disks/actions/detach" name="detachDisks"
      type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="disabled"/>

    <Action href="/virtualMachines/1/hardwareConfiguration/disks/actions/attach" name="attachDisks"
      type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="disabled"/>

  </Actions>

  <ProcessorCount>2</ProcessorCount>

  <Memory>

    <Unit>MB</Unit>

    <Value>1024</Value>

  </Memory>

  <Disks>

    <Disk>

      <Index>0</Index>

      <Size>

        <Unit>GB</Unit>

        <Value>2</Value>

      </Size>

      <Name>Disk 1</Name>

    </Disk>

    <Disk>

      <Index>1</Index>

      <Size>

        <Unit>GB</Unit>
```

```
        <Value>10</Value>
      </Size>
      <Name>Disk 2</Name>
    </Disk>
  </Disks>
  <Nics>
    <Nic>
      <UnitNumber>0</UnitNumber>
      <Name>Network Adapter1</Name>
      <MacAddress>00:00:00:00:00:00:01</MacAddress>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Nic>
    <Nic>
      <UnitNumber>1</UnitNumber>
      <Name>Network Adapter2</Name>
      <MacAddress>00:00:00:00:00:00:02</MacAddress>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Nic>
  </Nics>
</HardwareConfiguration>
```


Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.4 Get Virtual Machines Configuration Options

The Get Virtual Machines Configuration Options call returns information regarding the configuration options of a specified virtual machine in a compute pool.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 2 = 0	Linux configuration (SSH key required)
virtual machine identifier mod 2 != 0	Windows configuration (password required)

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/configurationOptions
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/1/configurationOptions
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachineConfigurationOptions
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachineConfigurationOptions href="/virtualMachines/{virtual machine
  identifier}/configurationOptions"
  type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Disk>

    <Minimum>{minimum disks permitted}</Minimum>

    <Maximum>{maximum disks permitted}</Maximum>

    <SystemDisk>

      <ResourceCapacityRange>

        <MinimumSize>

          <Unit>{unit of minimum size value}</Unit>

          <Value>{minimum size}</Value>

        </MinimumSize>

        <MaximumSize>

          <Unit>{unit of maximum size value}</Unit>

          <Value>{maximum size}</Value>

        </MaximumSize>

        <StepFactor>

          <Unit>{unit of step factor value}</Unit>

          <Value>{step factor size}</Value>
```

```
        </StepFactor>
      </ResourceCapacityRange>
      <MonthlyCost>{monthly cost}</MonthlyCost>
    </SystemDisk>
    <DataDisk>
      <ResourceCapacityRange>
        <MinimumSize>
          <Unit>{unit of minimum size value}</Unit>
          <Value>{minimum size}</Value>
        </MinimumSize>
        <MaximumSize>
          <Unit>{unit of maximum size value}</Unit>
          <Value>{maximum size}</Value>
        </MaximumSize>
        <StepFactor>
          <Unit>{unit of step factor value}</Unit>
          <Value>{step factor size}</Value>
        </StepFactor>
      </ResourceCapacityRange>
      <MonthlyCost>{monthly cost}</MonthlyCost>
    </DataDisk>
  </Disk>
  <Customization>
    <Type>{operating system family}</Type>
    <CanPowerOn>{true | false}</CanPowerOn>
    <PasswordRequired>{true | false}</PasswordRequired>
    <SshKeyRequired>{true | false}</SshKeyRequired>
  </Customization>
</VirtualMachineConfigurationOptions>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1012
  Content-Type: application/vnd.tmrk.cloud.virtualMachineConfigurationOptions
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 21 Jun 2011 15:07:16 GMT

<VirtualMachineConfigurationOptions href="/virtualMachines/1/configurationOptions"
  type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <Disk>
      <Minimum>1</Minimum>
      <Maximum>15</Maximum>
      <SystemDisk>
        <ResourceCapacityRange>
          <MinimumSize>
            <Unit>GB</Unit>
            <Value>1</Value>
          </MinimumSize>
          <MaximumSize>
            <Unit>GB</Unit>
            <Value>30</Value>
          </MaximumSize>
          <StepFactor>
            <Unit>GB</Unit>
            <Value>1</Value>
          </StepFactor>
        </ResourceCapacityRange>
        <MonthlyCost>0</MonthlyCost>
      </SystemDisk>
      <DataDisk>
        <ResourceCapacityRange>
          <MinimumSize>
            <Unit>GB</Unit>
            <Value>25</Value>
          </MinimumSize>
          <MaximumSize>
            <Unit>GB</Unit>
            <Value>500</Value>
          </MaximumSize>
          <StepFactor>
            <Unit>GB</Unit>
            <Value>5</Value>
          </StepFactor>
        </ResourceCapacityRange>
        <MonthlyCost>0</MonthlyCost>
      </DataDisk>
```

```
    </Disk>
    <Customization>
      <Type>Windows</Type>
      <CanPowerOn>true</CanPowerOn>
      <PasswordRequired>true</PasswordRequired>
      <SshKeyRequired>false</SshKeyRequired>
    </Customization>
  </VirtualMachineConfigurationOptions>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.5 Get Virtual Machines Assigned IP Addresses

The Get Virtual Machines Assigned IP Addresses call returns information regarding the IP addresses assigned to a specified virtual machine in a compute pool.

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/assignedIps
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/1/assignedIps
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachineAssignedIps
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
  type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>

  </Actions>

  <Networks>

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">

      <IpAddresses>
```

```
        <IpAddress>{assigned IP address}</IpAddress>
          ⋮
      </IpAddresses>
    </Network>
      ⋮
  </Networks>
</AssignedIpAddresses>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 543
  Content-Type: application/vnd.tmrk.cloud.virtualMachineAssignedIps
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 16:46:51 GMT

<AssignedIpAddresses href="/virtualMachines/1/assignedIps"
  type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Actions>

    <Action href="/virtualMachines/1/assignedIps" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>

  </Actions>

  <Networks>

    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">

      <IpAddresses>

        <IpAddress>10.0.4.34</IpAddress>

        <IpAddress>10.0.4.37</IpAddress>

      </IpAddresses>

    </Network>

  </Networks>

</AssignedIpAddresses>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.6 Get Virtual Machines Guest Processes

The Get Virtual Machines Guest Processes call returns information regarding processes running on a virtual machine.

Note: The Get Virtual Machine Guest Processes call requires valid credentials for a user with permission to retrieve processes on the virtual machine. Pass the credentials in the `X-Guest-User` and `X-Guest-Password` header fields as described in *5.5 Header*.

Note: To retrieve processes on a virtual machine requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/guest/processes
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/3/guest/processes
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.guest.process; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<GuestProcesses href="/virtualMachines/{virtual machine identifier}/guest/processes"
  type="application/vnd.tmrk.cloud.guest.process; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <GuestProcess>

    <Name>{process name}</Name>

    <ProcessId>{process identifier}</ProcessId>

  </GuestProcess>

    ⋮

</GuestProcesses>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 446
  Content-Type: application/vnd.tmrk.cloud.guest.process; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 16:57:10 GMT

<GuestProcesses href="/virtualMachines/3/guest/processes"
```

```
    type="application/vnd.tmrk.cloud.guest.process; type=collection"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/virtualMachines/3" type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>
    </Links>
    <GuestProcess>
      <Name>process1</Name>
      <ProcessId>1</ProcessId>
    </GuestProcess>
    <GuestProcess>
      <Name>process2</Name>
      <ProcessId>2</ProcessId>
    </GuestProcess>
  </GuestProcesses>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.7 Get Virtual Machines Guest File

The Get Virtual Machines Guest File call returns a specified file from a specified virtual machine.

Note:

- The Get Virtual Machine Guest File call requires valid credentials for a user with permission to retrieve the file on the virtual machine. Pass the credentials in the `X-Guest-User` and `X-Guest-Password` header fields as described in *5.5 Header*.
- The `path` query part of the URL requires a fully qualified path, also called absolute path, to the filename.
- The total size of the file may not exceed 1MB.
- To retrieve a file from the virtual machine requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/guest/action/files?path={file
  path and name}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/3/guest/action/files?path=c:\io.sys
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/octet-stream
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

{file contents}
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 11
  Content-Type: application/octet-stream
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 17:30:26 GMT

Hello there
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.8 Get Virtual Machines MKS Ticket

The Get Virtual Machines MKS Ticket call returns a MKS ticket for the original console connect feature.

Note: Without a client application, the MKS ticket is not useful.

Request

```
GET http://{Terremark URI}/virtualMachines/{virtual machine identifier}/mksTicket
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/virtualMachines/3/mksTicket
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.mksTicket
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<MksTicket xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Host>{host name}</Host>
```

```
  <Port>{port}</Port>
  <ConfigurationPath>{host path}</ConfigurationPath>
  <Ticket>{ticket}</Ticket>
</MksTicket>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 300
  Content-Type: application/vnd.tmrk.cloud.mksTicket
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 25 Oct 2011 21:31:32 GMT
<MksTicket xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Host>MyHost</Host>
  <Port>902</Port>
  <ConfigurationPath>/vmfs/volumes/55c08bac-6d2b-4420-95fb-
    60ab13e36bd4/36000_VirtualMachine1/36000_VirtualMachine1.vmx</ConfigurationPath>
  <Ticket>6b90095c-b19a-448a-a95d-fbb60e1c187d</Ticket>
</MksTicket>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.9 Action Virtual Machines Create from Template

The Action Virtual Machines Create from Template call creates a new virtual machine from a template in the compute pool. If successful, the call returns information regarding the virtual machine that was created.

The `name` attribute on <CreateVirtualMachine … > is required.

Note: The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<ProcessorCount> is required and refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Memory> is required. Permitted values are in megabytes and must be evenly divisible by 4.

<Layout> is required. Only one of three variations is permitted in a call:

1. Add to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be added.

2. Add to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

3. Add to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

<Description> is optional but if present the description must not exceed one hundred characters.

<Tags> is optional but is permitted to be empty if no tags are desired on the virtual machine.

One of either <WindowsCustomization> or <LinuxCustomization> is required depending on the operating system family of the template selected.

1. Requirements common to all operating system families.

   <NetworkSettings> and <NetworkAdapterSettings> are required.

   At least one <NetworkAdapter> is required. Up to four <NetworkAdapters> may be included.

   <Network … > is required. The `href` attribute is required to identify the network to which the network adapter will be bound.

   <NetworkType> is optional and ignored if present.

   <IpAddress> is required.

   <DnsSettings> is optional. If not included, defaults to DNS for the data center.

   <PrimaryDns> is required if <DnsSettings> is included.

   <PoweredOn> is optional. If not included, defaults to false.

2. Windows operating system family.

   <Password> is required.

3. Linux operating system family.

   <SshKey> is required and the `href` attribute on the element is required to identify the SSH key to use.

The `href` attribute is required on <Template … >, which itself is required, to identify the template from which to create the virtual machine.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<HardwareConfiguration … >, which exists on the template and therefore exists on the created virtual machine, will not appear in the response if the task is not complete, which is the normal situation.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Request

```
POST http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}/ …
  action/createVirtualMachine
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1/ …
  action/createVirtualMachine
```

Body

```
<CreateVirtualMachine name="{virtual machine name}"> <!-- name is required -->
  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount> <!-- Required -->
  <Memory> <!-- Required -->
    <Unit>{unit of memory value}</Unit>
    <Value>{memory size}</Value>
  </Memory>
  <!-- Only one form of the <Layout> is permitted -->
  <Layout> <!-- Required – existing group -->
    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <Layout> <!-- Required – existing row, new group -->
    <Row href="/layoutRows/{row identifier}"
      type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Layout> <!-- Required – new row, new group -->
    <NewRow>{row name}</NewRow> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
```

```
    <Tag>{user defined tag}</Tag>
      ⋮
  </Tags>
  <WindowsCustomization> <!-- Either WindowsCustomization or LinuxCustomization -->
    <NetworkSettings>
      <NetworkAdapterSettings>
        <NetworkAdapter>
          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"> <!-- Required -->
            <NetworkType>{Dmz | Internal}</NetworkType> <!--Optional, ignored if present -->
          </Network
          <IpAddress>{IP address}</IpAddress> <!-- Required -->
        </NetworkAdapter>
          ⋮
      </NetworkAdapterSettings>
      <DnsSettings> <!-- Optional -->
        <PrimaryDns>{IP address}</PrimaryDns> <!-- Required if DnsSettings used -->
        <SecondaryDns>{IP address}</SecondaryDns> <!-- Optional -->
      </DnsSettings>
    </NetworkSettings>
    <Password>{password}</Password> <!-- Required -->
    <LicenseKey>{operating system license key}</LicenseKey> <!-- Optional -->
  </WindowsCustomization>
  <LinuxCustomization> <!-- Either WindowsCustomization or LinuxCustomization is required -->
    <NetworkSettings>
      <NetworkAdapterSettings>
        <NetworkAdapter>
          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"/> <!-- Required -->
          <IpAddress>{IP address}</IpAddress> <!-- Required -->
        </NetworkAdapter>
      </NetworkAdapterSettings>
      <DnsSettings> <!-- Optional -->
        <PrimaryDns>{IP address}</PrimaryDns> <!-- Required if DnsSettings used -->
        <SecondaryDns>{IP address}</SecondaryDns> <!-- Optional -->
      </DnsSettings>
    </NetworkSettings>
    <SshKey href="/admin/sshKeys/{SSH key identifier"
```

```
      type="application/vnd.tmrk.cloud.admin.sshKey"/> <!-- Required -->
    </LinuxCustomization> <!-- Either WindowsCustomization or LinuxCustomization -->
    <PoweredOn>{true | false}</PoweredOn> <!-- Optional -->
    <Template href="/templates/{template identifier}/computePools/{compute pool identifier}"
     type="application/vnd.tmrk.cloud.template"/> <!-- Required -->
  </CreateVirtualMachine>
```

EXAMPLE

```
  <CreateVirtualMachine name="VMName">
    <ProcessorCount>2</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>1024</Value>
    </Memory>
    <Layout>
      <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
      <NewGroup>GroupName</NewGroup>
    </Layout>
    <Description>This is my VM</Description>
    <Tags>
      <Tag>Web</Tag>
    </Tags>
    <LinuxCustomization>
      <NetworkSettings>
        <NetworkAdapterSettings>
          <NetworkAdapter>
            <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
            <IpAddress>10.0.4.34</IpAddress>
          </NetworkAdapter>
        </NetworkAdapterSettings>
        <DnsSettings>
          <PrimaryDns>10.1.1.1</PrimaryDns>
          <SecondaryDns>10.1.1.2</SecondaryDns>
        </DnsSettings>
      </NetworkSettings>
      <SshKey href="/admin/sshKeys/1" type="application/vnd.tmrk.cloud.admin.sshKey"/>
    </LinuxCustomization>
    <PoweredOn>true</PoweredOn>
```

```
  <Template href="/templates/1/computePools/1" type="application/vnd.tmrk.cloud.template"/>

</CreateVirtualMachine>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/{virtual machine identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
      type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
      type="application/octet-stream" rel="down"/>

  </Links>

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachine"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

    <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
      name="tools:unmount" actionDisabled="{noAccess | disabled}"/>
```

```
  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
   name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
   type="application/octet-stream"/>

</Actions>

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
 type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>Create Server</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
     item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
     domain part} | {API user family name}, {API user given name}}"
     type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Description>{textual description}</Description>

<Tags>

  <Tag>{user-defined tag}</Tag>

    ⋮

</Tags>

<Layout>

  <Row href="/layoutRows/{row identifier}" name="{row name}"
   type="application/vnd.tmrk.cloud.layoutRow"/>

  <Group href="/layoutGroups/{group identifier}" name="{group name}"
   type="application/vnd.tmrk.cloud.layoutGroup"/>

</Layout>

<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
 type="application/vnd.tmrk.cloud.networkHost"/>

<Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

<PoweredOn>{true | false}</PoweredOn>

<HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
 type="application/vnd.tmrk.cloud.virtualMachineHardware">

  <Actions>
```

```
    <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
     type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

    <Action href="/virtualMachines/{virtual machine
     identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
     type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine
     identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
     type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <Disks>

    <Disk>

      <Index>{disk index}</Index>

      <Size>

        <Unit>{unit of disk size value}</Unit>

        <Value>{disk size}</Value>

      </Size>

      <Name>{disk name}</Name>

    </Disk>

      ⋮

  </Disks>

  <Nics>

    <Nic>

      <UnitNumber>{network interface card number}</UnitNumber>

      <Name>{network interface card name}</Name>

      <MacAddress>{network interface card MAC address}</MacAddress>

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
       type="application/vnd.tmrk.cloud.network">

        <NetworkType>{Dmz | Internal}</NetworkType>

      </Network>

    </Nic>

      ⋮

  </Nics>

</HardwareConfiguration>

<IpAddresses>
```

```
    <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">

      <Actions>

        <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
          type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>

      </Actions>

      <Networks>

        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">

          <IpAddresses>

            <IpAddress>{assigned IP address}</IpAddress>

              ⋮

          </IpAddresses>

        </Network>

          ⋮

      </Networks>

    </AssignedIpAddresses>

    <DetectedIpAddresses>

      <IpAddress>{detected IP address}</IpAddress>

        ⋮

    </DetectedIpAddresses>

  </IpAddresses>

  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>

  <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>

  <MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>

  <CustomizationPending>{true | false}</CustomizationPending>

  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">

</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 3441
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Sep 2011 18:59:39 GMT

<VirtualMachine href="/virtualMachines/1" name="VMName"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
```

```
instance">
<Links>
  <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
    rel="up"/>
  <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
    rel="up"/>
  <Link href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection"
    rel="down"/>
  <Link href="/virtualMachines/1/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
    type=collection" rel="down"/>
  <Link href="/virtualMachines/1/configurationOptions"
    type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
  <Link href="/virtualMachines/1/guest/action/files" type="application/octet-stream" rel="down"/>
</Links>
<Actions>
  <Action href="/virtualMachines/1" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"/>
  <Action href="/virtualMachines/1/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>
  <Action href="/virtualMachines/1" name="remove" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/powerOff" name="power:powerOff"/>
  <Action href="/virtualMachines/1/action/reboot" name="power:reboot"/>
  <Action href="/virtualMachines/1/action/shutdown" name="power:shutdown"/>
  <Action href="/virtualMachines/1/action/powerOn" name="power:powerOn" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/tools/action/mount" name="tools:mount"/>
  <Action href="/virtualMachines/1/tools/action/unmount" name="tools:unmount"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/guest/action/createProcess" name="createGuestProcess"
    type="application/vnd.tmrk.cloud.guest.process"/>
  <Action href="/virtualMachines/1/guest/action/files" name="createFile" type="application/octet-
    stream"/>
</Actions>
<Tasks href="/tasks/virtualMachines/833" type="application/vnd.tmrk.cloud.task; type=collection">
  <Task href="/tasks/833" type="application/vnd.tmrk.cloud.task">
    <Operation>Create Server</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/virtualMachines/1" name="VMName"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-09-15T18:59:40.3845803Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
```

```
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>1</TotalCount>
  </Tasks>
  <Description>This is my VM</Description>
  <Tags>
    <Tag>Tag 1</Tag>
    <Tag>Tag 2</Tag>
  </Tags>
  <Layout>
    <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/4" name="GroupName" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <NetworkHost href="/networkHosts/1" name="VirtualMachine1"
    type="application/vnd.tmrk.cloud.networkHost"/>
  <Status>NotDeployed</Status>
  <PoweredOn>false</PoweredOn>
  <ToolsStatus>NotInstalled</ToolsStatus>
  <MediaStatus>Unmounted</MediaStatus>
  <CustomizationPending>false</CustomizationPending>
</VirtualMachine>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.10 Action Virtual Machines Create Copy

The Action Virtual Machines Create Copy call creates a new virtual machine from an existing virtual machine in the compute pool. Customization of the configuration is permitted during a customizable copy. If successful, the call returns information regarding the virtual machine that was created.

The `name` attribute on <CopyVirtualMachine … > is required.

Note:

- The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.
- The source virtual machine must have a <PoweredOn> value of `false`.
- The source virtual machine must have a <Status> value of `Deployed`.
- The source virtual machine must have a <ToolsStatus> value of `Current`.

The `href` attribute is required on <Source … >, which itself is required, to identify the existing virtual machine to copy when creating the virtual machine.

<ProcessorCount> is required and refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Memory> is required. Permitted values are in megabytes and must be evenly divisible by 4.

<Layout> is optional. If present, only one of three variations is permitted in a call:

1. Add to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be added.

2. Add to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

3. Add to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

Note: If not used, the new virtual machine is assigned to the same row and group as the source virtual machine.

If <DisableCustomization>true</DisableCustomization>, an exact copy of the source virtual machine is made and neither <WindowsCustomization> nor <LinuxCustomization> may be present.

One of either <WindowsCustomization> or <LinuxCustomization> is required, unless <DisableCustomization>true</DisableCustomization>, depending on the operating system family of the virtual machine from which to copy.

1. Requirements common to all operating system families.

   <NetworkSettings> and <NetworkAdapterSettings> are required.

   At least one <NetworkAdapter> is required. Up to four <NetworkAdapters> may be included.

<Network … > is optional. If included the `href` attribute is required to identify the network to which the network adapter will be bound. If not included, defaults to the first available subnet.

<NetworkType> is optional and ignored if present.

<IpAddress> is optional. If not included, defaults to the first available IP address on the subnet.

<DnsSettings> is optional. If not included, defaults to DNS for the data center.

<PrimaryDns> is required if <DnsSettings> is included.

<PoweredOn> is optional. If not included, defaults to false.

2. Windows operating system family.

   <Password> is required.

3. Linux operating system family.

   <SshKey> is optional and ignored if present.

<Description> is optional but if present the description must not exceed one hundred characters.

<Tags> is optional and ignored if present. The tags on the source virtual machine are copied to the newly created virtual machine. To assign different tags, use **Action Virtual Machines Edit** to change the tags after the copy creates the new virtual machine.

Note: <PoweredOn>true</PoweredOn> will start the new virtual machine after copying. Because the copy is identical to the source, subsequently starting the source causes an IP conflict on the network.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.

- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<HardwareConfiguration … >, which exists on the source virtual machine and therefore exists on the copied virtual machine, will not appear in the response if the task is not complete, which is the normal situation.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Live Specification Test Values

Condition	Outcome
Compute pool identifier = 98	Error: invalid compute pool
virtual machine identifier = not(38 or 46)	Operating system Asian Linux
virtual machine identifier = 38	Operating system Windows 7
virtual machine identifier = 46	Operating system DOS
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier = 1 or not (mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	VMware Tools status `Current`

Request

```
POST http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}/ …
  action/copyVirtualMachine
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1/ …
  action/copyVirtualMachine
```

Body

```
<CopyVirtualMachine name="{virtual machine name}"> <!-- name is required -->

  <Source href="/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.virtualMachine"/> <!-- Required -->

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount> <!-- Required -->

  <Memory> <!-- Required -->

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <!-- Only one form of the <Layout> is permitted -->

  <Layout> <!-- Required – existing group -->

    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>

  </Layout>

  <Layout> <!-- Required – existing row, new group -->

    <Row href="/layoutRows/{row identifier}"
      type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->

    <NewGroup>{group name}</NewGroup> <!-- Required -->

  </Layout>

  <Layout> <!-- Required – new row, new group -->

    <NewRow>{row name}</NewRow> <!-- Required -->

    <NewGroup>{group name}</NewGroup> <!-- Required -->

  </Layout>

  <DisableCustomization>{true | false}</DisableCustomization> <!-- Optional -->

  <WindowsCustomization> <!-- Either WindowsCustomization or LinuxCustomization -->

    <NetworkSettings> <!-- Required -->

      <NetworkAdapterSettings> <!-- Required -->

        <NetworkAdapter> <!-- Optional -->

          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"> <!-- Optional -->

            <NetworkType>{Dmz | Internal}</NetworkType> <!--Optional, ignored if present -->

          </Network>

          <IpAddress>{IP address}</IpAddress> <!-- Optional -->
```

```
        </NetworkAdapter>
         ⋮
      </NetworkAdapterSettings>
      <DnsSettings> <!-- Optional -->
        <PrimaryDns>{IP address}</PrimaryDns> <!-- Required if DnsSettings used -->
        <SecondaryDns>{IP address}</SecondaryDns> <!-- Optional -->
      </DnsSettings>
    </NetworkSettings>
    <Password>{password}</Password> <!--Required -->
    <LicenseKey>{operating system license key}</LicenseKey> <!--Optional, ignored if present -->
  </WindowsCustomization>
  <LinuxCustomization> <!-- Either WindowsCustomization or LinuxCustomization is required -->
    <NetworkSettings> <!-- Required -->
      <NetworkAdapterSettings> <!-- Required -->
        <NetworkAdapter> <!-- Optional -->
          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"/> <!-- Optional -->
          <IpAddress>{IP address}</IpAddress> <!-- Optional -->
        </NetworkAdapter>
      </NetworkAdapterSettings>
      <DnsSettings> <!-- Optional -->
        <PrimaryDns>{IP address}</PrimaryDns> <!-- Required if DnsSettings used -->
        <SecondaryDns>{IP address}</SecondaryDns> <!-- Optional -->
      </DnsSettings>
    </NetworkSettings>
    <SshKey href="/admin/sshKeys/{SSH key identifier}"
      type="application/vnd.tmrk.cloud.admin.sshKey"/> <!--Optional, ignored if present -->
  </LinuxCustomization> <!-- Either WindowsCustomization or LinuxCustomization -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional, ignored if present -->
    <Tag>{user defined tag}</Tag>
      ⋮
  </Tags>
  <PoweredOn>{true | false}</PoweredOn> <!-- Optional -->
</CopyVirtualMachine>
```

EXAMPLE

```
<CopyVirtualMachine name="VMName">
```

```
  <Source href="/virtualMachines/38"/>
  <ProcessorCount>2</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>1024</Value>
  </Memory>
  <Layout>
    <Row href="/layoutRows/1"/>
    <NewGroup>GroupName</NewGroup>
  </Layout>
  <DisableCustomization>false</DisableCustomization>
  <WindowsCustomization>
    <NetworkSettings>
      <NetworkAdapterSettings>
        <NetworkAdapter>
          <Network href="/networks/1" name="10.0.4.32/27"/>
          <IpAddress>10.0.4.34</IpAddress>
        </NetworkAdapter>
      </NetworkAdapterSettings>
      <DnsSettings>
        <PrimaryDns>10.1.1.1</PrimaryDns>
        <SecondaryDns>10.1.1.2</SecondaryDns>
      </DnsSettings>
    </NetworkSettings>
    <Password>Btfsplk</Password>
    <LicenseKey>M733K-IC7LE-W096J-R7KMF-7RZ2K</LicenseKey>
  </WindowsCustomization>
  <Description>This is my VM</Description>
  <Tags>
    <Tag>Web</Tag>
  </Tags>
  <PoweredOn>true</PoweredOn>
</CopyVirtualMachine>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/{virtual machine identifier}
```

```
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
      type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
      type="application/octet-stream" rel="down"/>

  </Links>

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachine"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

    <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
      name="tools:unmount" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
      name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
      type="application/octet-stream"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->
```

```
    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
      <Operation>Copy Server</Operation>
      <Status>{Queued | Running | Failed | Success | Error}</Status>
      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>
      <StartTime>{time action started}</StartTime>
      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
      <Notes>{notes on action}</Notes>
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
      ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Description>{textual description}</Description>
  <Tags>
    <Tag>{user-defined tag}</Tag>
      ⋮
  </Tags>
  <Layout>
    <Row href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/{group identifier}" name="{group name}"
      type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
    type="application/vnd.tmrk.cloud.networkHost"/>
  <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
  <PoweredOn>{true | false}</PoweredOn>
  <HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
    type="application/vnd.tmrk.cloud.virtualMachineHardware">
    <Actions>
      <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
        type="application/vnd.tmrk.cloud.virtualMachineHardware"/>
      <Action href="/virtualMachines/{virtual machine
        identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
        type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>
      <Action href="/virtualMachines/{virtual machine
        identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
```

```
      type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <Disks>
      <Disk>
        <Index>{disk index}</Index>
        <Size>
          <Unit>{unit of disk size value}</Unit>
          <Value>{disk size}</Value>
        </Size>
        <Name>{disk name}</Name>
      </Disk>
        ⋮
    </Disks>
    <Nics>
      <Nic>
        <UnitNumber>{network interface card number}</UnitNumber>
        <Name>{network interface card name}</Name>
        <MacAddress>{network interface card MAC address}</MacAddress>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <NetworkType>{Dmz | Internal}</NetworkType>
        </Network>
      </Nic>
        ⋮
    </Nics>
  </HardwareConfiguration>
  <IpAddresses>
    <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
      <Actions>
        <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
          type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
      </Actions>
```

```
      <Networks>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <IpAddresses>
            <IpAddress>{assigned IP address}</IpAddress>
              ⋮
          </IpAddresses>
        </Network>
          ⋮
      </Networks>
    </AssignedIpAddresses>
    <DetectedIpAddresses>
      <IpAddress>{detected IP address}</IpAddress>
        ⋮
    </DetectedIpAddresses>
  </IpAddresses>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
  <MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>
  <CustomizationPending>{true | false}</CustomizationPending>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 3843
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/138
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 29 Nov 2011 20:51:54 GMT
<VirtualMachine href="/virtualMachines/138" name="VMName"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/tasks/virtualMachines/138" type="application/vnd.tmrk.cloud.task; type=collection"
```

```
    rel="down"/>
  <Link href="/virtualMachines/138/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
    type=collection" rel="down"/>
  <Link href="/virtualMachines/138/configurationOptions"
    type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
  <Link href="/virtualMachines/138/guest/action/files" type="application/octet-stream" rel="down"/>
</Links>
<Actions>
  <Action href="/virtualMachines/138" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest" actionDisabled="disabled"/>
  <Action href="/virtualMachines/138" name="remove" actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/powerOff" name="power:powerOff"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/reboot" name="power:reboot" actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/shutdown" name="power:shutdown"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/powerOn" name="power:powerOn"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/tools/action/mount" name="tools:mount"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/tools/action/unmount" name="tools:unmount"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/action/upgradeHardware" name="upgrade"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/guest/action/createProcess" name="createGuestProcess"
    type="application/vnd.tmrk.cloud.guest.process" actionDisabled="disabled"/>
  <Action href="/virtualMachines/138/guest/action/files" name="createFile" type="application/octet-
    stream" actionDisabled="disabled"/>
</Actions>
<Tasks href="/tasks/virtualMachines/138" type="application/vnd.tmrk.cloud.task; type=collection">
  <Task href="/tasks/833" type="application/vnd.tmrk.cloud.task">
    <Operation>Copy Server</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/virtualMachines/138" name="VMName"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-11-29T20:51:54.6250187Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
```

```
      </Task>
      <TotalCount>1</TotalCount>
    </Tasks>
    <Description>This is my VM</Description>
    <Tags>
      <Tag>Web</Tag>
    </Tags>
    <Layout>
      <Row href="/layoutRows/1" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Group href="/layoutGroups/4" name="GroupName" type="application/vnd.tmrk.cloud.layoutGroup"/>
    </Layout>
    <NetworkHost href="/networkHosts/38" name="VirtualMachine38"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Status>NotDeployed</Status>
    <PoweredOn>false</PoweredOn>
    <OperatingSystem href="/operatingSystems/windows7guest/computePools/1" name="Full name of
      windows7Guest" type="application/vnd.tmrk.cloud.operatingSystem"/>
    <MediaStatus>IsoMounted</MediaStatus>
    <CustomizationPending>false</CustomizationPending>
  </VirtualMachine>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.11 Action Virtual Machines Create Copy Identical

The Action Virtual Machines Create Copy Identical call creates a new virtual machine from an existing virtual machine in the compute pool. No customization of the configuration is permitted during an identical copy. If successful, the call returns information regarding the virtual machine that was created.

Note: The newly created virtual machine has the same network address as the source virtual machine. If both are powered on an IP address conflict will result on the network. The IP address of one of the virtual machines must be changed before powering on both virtual machines.

The `name` attribute on <CopyIdenticalVirtualMachine … > is required.

Note:

- The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.
- The source virtual machine must have a <PoweredOn> value of `false`.
- The source virtual machine must have a <Status> value of `Deployed`.

- The source virtual machine must have a <ToolsStatus> value of `Current`.

The `href` attribute is required on <Source … >, which itself is required, to identify the existing virtual machine to copy identically when creating the virtual machine.

<Layout> is optional. If present, only one of three variations is permitted in a call:

1. Add to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be added.

2. Add to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

3. Add to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

Note: If <Layout> is not used, the new virtual machine is assigned to the same row and group as the source virtual machine.

<Description> is optional but if present the description must not exceed one hundred characters.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<HardwareConfiguration … >, which exists on the source virtual machine and therefore exists on the copied virtual machine, will not appear in the response if the task is not complete, which is the normal situation.

<Tags> is optional and ignored if present. The tags on the source virtual machine are copied to the newly created virtual machine. To assign different tags, use **Action Virtual Machines Edit** to change the tags after the copy creates the new virtual machine.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Live Specification Test Values

Condition	Outcome
Compute pool identifier = 98	Error: invalid compute pool
virtual machine identifier = not(38 or 46)	Operating system Asian Linux

Condition	Outcome
virtual machine identifier = 38	Operating system Windows 7
virtual machine identifier = 46	Operating system DOS
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier = 1 or not (mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	VMware Tools status `Current`

Request

```
POST http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}/ …
  action/copyIdenticalVirtualMachine
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1/ …
  action/copyIdenticalVirtualMachine
```

Body

```
<CopyIdenticalVirtualMachine name="{virtual machine name}"> <!-- name is required -->

  <Source href="/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.virtualMachine"/> <!-- Required -->

  <!-- Only one form of the <Layout> is permitted -->

  <Layout> <!-- Required – existing group -->

    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>

  </Layout>

  <Layout> <!-- Required – existing row, new group -->

    <Row href="/layoutRows/{row identifier}"
      type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->

    <NewGroup>{group name}</NewGroup> <!-- Required -->

  </Layout>

  <Layout> <!-- Required – new row, new group -->

    <NewRow>{row name}</NewRow> <!-- Required -->

    <NewGroup>{group name}</NewGroup> <!-- Required -->

  </Layout>

  <Description>{textual description}</Description> <!-- Optional -->

</CopyIdenticalVirtualMachine>
```

EXAMPLE

```
<CopyIdenticalVirtualMachine name="VMName">

  <Source href="/virtualMachines/2" type="application/vnd.tmrk.cloud.virtualMachine"/>
```

```
  <Layout>
    <Row href="/layoutRows/1" type="application/vnd.tmrk.cloud.layoutRow"/>
    <NewGroup>GroupName</NewGroup>
  </Layout>
  <Description>This is my VM</Description>
</CopyIdenticalVirtualMachine>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/{virtual machine identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <Link href="/tasks/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>
    <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
      type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>
    <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
    <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
      type="application/octet-stream" rel="down"/>
  </Links>
  <Actions>
    <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>
    <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
      | disabled}"/>
    <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>
    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>
    <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>
    <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>
```

```
    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
      name="tools:unmount" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/upgradeHardware" name="upgrade"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
      name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
      type="application/octet-stream"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>Copy Server</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>

      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

      ⋮

    <TotalCount>{total number of tasks}</TotalCount>

  </Tasks>

  <Description>{textual description}</Description>

  <Tags>

    <Tag>{user-defined tag}</Tag>

      ⋮

  </Tags>

  <Layout>

    <Row href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow"/>

    <Group href="/layoutGroups/{group identifier}" name="{group name}"
      type="application/vnd.tmrk.cloud.layoutGroup"/>

  </Layout>
```

```
<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
 type="application/vnd.tmrk.cloud.networkHost"/>

<Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

<PoweredOn>{true | false}</PoweredOn>

<HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
 type="application/vnd.tmrk.cloud.virtualMachineHardware">

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
     type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

    <Action href="/virtualMachines/{virtual machine
     identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
     type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine
     identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
     type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <Disks>

    <Disk>

      <Index>{disk index}</Index>

      <Size>

        <Unit>{unit of disk size value}</Unit>

        <Value>{disk size}</Value>

      </Size>

      <Name>{disk name}</Name>

    </Disk>

      ⋮

  </Disks>

  <Nics>

    <Nic>

      <UnitNumber>{network interface card number}</UnitNumber>

      <Name>{network interface card name}</Name>

      <MacAddress>{network interface card MAC address}</MacAddress>

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
       type="application/vnd.tmrk.cloud.network">

        <NetworkType>{Dmz | Internal}</NetworkType>
```

```
      </Network>
    </Nic>
      ⋮
  </Nics>
</HardwareConfiguration>
<IpAddresses>
  <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
    type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
    <Actions>
      <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
        type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
    </Actions>
    <Networks>
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>{assigned IP address}</IpAddress>
            ⋮
        </IpAddresses>
      </Network>
        ⋮
    </Networks>
  </AssignedIpAddresses>
  <DetectedIpAddresses>
    <IpAddress>{detected IP address}</IpAddress>
      ⋮
  </DetectedIpAddresses>
</IpAddresses>
<OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
  identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
<ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
<MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>
<CustomizationPending>{true | false}</CustomizationPending>
<PendingRetryOperation href="/{detachDiskRetryOperations |
  attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 201 Created
```

```
  Content-Length: 3441
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Sep 2011 19:13:08 GMT

<VirtualMachine href="/virtualMachines/102" name="VMName"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/tasks/virtualMachines/102" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

    <Link href="/virtualMachines/102/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
      type=collection" rel="down"/>

    <Link href="/virtualMachines/102/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

    <Link href="/virtualMachines/102/guest/action/files" type="application/octet-stream" rel="down"/>

  </Links>

  <Actions>

    <Action href="/virtualMachines/102" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"/>

    <Action href="/virtualMachines/102/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

    <Action href="/virtualMachines/102" name="remove" actionDisabled="disabled"/>

    <Action href="/virtualMachines/102/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>

    <Action href="/virtualMachines/102/action/powerOff" name="power:powerOff"/>

    <Action href="/virtualMachines/102/action/reboot" name="power:reboot"/>

    <Action href="/virtualMachines/102/action/shutdown" name="power:shutdown"/>

    <Action href="/virtualMachines/102/action/powerOn" name="power:powerOn"
      actionDisabled="disabled"/>

    <Action href="/virtualMachines/102/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/102/tools/action/unmount" name="tools:unmount"
      actionDisabled="disabled"/>

    <Action href="/virtualMachines/102/action/upgradeHardware" name="upgrade"
      actionDisabled="disabled"/>

    <Action href="/virtualMachines/102/guest/action/createProcess" name="createGuestProcess"
      type="application/vnd.tmrk.cloud.guest.process"/>

    <Action href="/virtualMachines/102/guest/action/files" name="createFile" type="application/octet-
      stream"/>

  </Actions>
```

```
    <Tasks href="/tasks/virtualMachines/102" type="application/vnd.tmrk.cloud.task; type=collection">
      <Task href="/tasks/833" type="application/vnd.tmrk.cloud.task">
        <Operation>Copy Server</Operation>
        <Status>Running</Status>
        <ImpactedItem href="/virtualMachines/102" name="VMName"
         type="application/vnd.tmrk.cloud.virtualMachine"/>
        <StartTime>2011-09-15T19:13:08.6606573Z</StartTime>
        <Notes>Some notes about the operation.</Notes>
        <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
      </Task>
      <TotalCount>1</TotalCount>
    </Tasks>
    <Description>This is my VM</Description>
    <Tags>
      <Tag>Tag 1</Tag>
      <Tag>Tag 2</Tag>
    </Tags>
    <Layout>
      <Row href="/layoutRows/1" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Group href="/layoutGroups/4" name="GroupName" type="application/vnd.tmrk.cloud.layoutGroup"/>
    </Layout>
    <NetworkHost href="/networkHosts/1" name="VirtualMachine1"
     type="application/vnd.tmrk.cloud.networkHost"/>
    <Status>NotDeployed</Status>
    <PoweredOn>false</PoweredOn>
    <OperatingSystem href="/operatingSystems/asianux32bit/computePools/1" name="Full name of
     Asianux32bit" type="application/vnd.tmrk.cloud.operatingSystem"/>
    <MediaStatus>Mounted</MediaStatus>
    <CustomizationPending>false</CustomizationPending>
  </VirtualMachine>
```


Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.12 Action Virtual Machines Create Blank

The Action Virtual Machines Create Blank call creates a new, blank virtual machine in the compute pool. If successful, the call returns information regarding the blank virtual machine that was created.

The `name` attribute on <CreateBlankVirtualMachine … > is required.

Note: The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<ProcessorCount> is required and refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Memory> is required. Permitted values are in megabytes and must be evenly divisible by 4.

<Layout> is required. Only one of three variations is permitted in a call:

1. Add to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be added.

2. Add to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

3. Add to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

<Description> is optional but if present the description must not exceed one hundred characters.

<Tags> is optional but is permitted to be empty if no tags are desired on the virtual machine.

<OperatingSystem … > is required and the `href` attribute is required to identify the operating system to be installed on the virtual machine. This ensures the virtual machine is correctly configured for the expected operating system.

Note: A virtual machine must have a system disk. Therefore, one disk is required: either one <Disk> under <Disks> or one <Detached Disk … > under <Detached Disks>. Both may not be used.

<Disks> is required. <Disk> is optional but only one disk may be defined when creating a blank virtual machine. Within a disk, <Index> is required as an integer with the first disk set to zero and incremented for each additional disk. <Size> is required. <Unit> is required and will be "GB" for disks. <Value> is required and must be greater than zero and less than 512. <Name> is optional and ignored if present.

<Detached Disks> is required. <Detached Disk … > is optional but if used the `href` attribute is required to identify the detached disk to be attached. Only one detached disk may be attached when creating a blank virtual machine.

<NetworkAdapterSettings> is required.

At least one <NetworkAdapter> is required. Up to four <NetworkAdapters> may be included.

<Network … > is required and the `href` attribute is required to identify the network to which the network adapter will be bound.

<NetworkType> is optional and ignored if present.

<IpAddress> is optional and ignored if present.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.

- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<HardwareConfiguration … >, which is defined in the body and therefore exists on the created blank virtual machine, will not appear in the response if the task is not complete, which is the normal situation.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Request

```
POST http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}/ …
  action/createBlankVirtualMachine
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1/ …
  action/createBlankVirtualMachine
```

Body

```
<CreateBlankVirtualMachine name="{virtual machine name}"> <!-- name is required -->
  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount> <!-- Required -->
  <Memory> <!-- Required -->
    <Unit>{unit of memory value}</Unit>
    <Value>{memory size}</Value>
  </Memory>
  <!-- Only one form of the <Layout> is permitted -->
  <Layout> <!-- Required – existing group -->
    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <Layout> <!-- Required – existing row, new group -->
    <Row href="/layoutRows/{row identifier}"
      type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Layout> <!-- Required – new row, new group -->
```

```
    <NewRow>{row name}</NewRow> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user defined tag}</Tag>
      ⋮
  </Tags>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}"/> <!-- Required -->
  <Disks> <!-- Required -->
    <Disk> <!-- Optional and only one permitted -->
      <Index>{disk index}</Index> <!-- Required -->
      <Size> <!-- Required -->
        <Unit>{unit of disk size value}</Unit> <!-- Required -->
        <Value>{disk size}</Value> <!-- Required -->
      </Size>
      <Name>{disk name}</Name> <!-- Optional, ignored if present -->
    </Disk>
  </Disks>
  <NetworkAdapterSettings> <!-- Required -->
    <NetworkAdapter> <!-- Required -->
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"> <!-- Required -->
        <NetworkType>{Dmz | Internal}</NetworkType> <!--Optional, ignored if present -->
      </Network>
      <IpAddress>{IP address}</IpAddress> <!-- Optional, ignored if present -->
    </NetworkAdapter>
  </NetworkAdapterSettings>
  <DetachedDisks> <!-- Required -->
    <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk"/> <!-- Optional and only one permitted -->
  </DetachedDisks>
</CreateBlankVirtualMachine>
```

EXAMPLE

```
<CreateBlankVirtualMachine name="BlankVmName">
  <ProcessorCount>2</ProcessorCount>
```

```
  <Memory>
    <Unit>MB</Unit>
    <Value>1024</Value>
  </Memory>
  <Layout>
    <NewRow>NewRowName</NewRow>
    <NewGroup>NewGroupName}</NewGroup>
  </Layout>
  <Description>This is my VM</Description>
  <Tags>
    <Tag>Tag 1</Tag>
    <Tag>Tag 2</Tag>
  </Tags>
  <OperatingSystem href="/operatingSystems/win32/computePools/1"/>
  <Disks>
    <Disk>
      <Index>0</Index>
      <Size>
        <Unit>GB</Unit>
        <Value>2</Value>
      </Size>
      <Name>Disk 1</Name>
    </Disk>
  </Disks>
  <NetworkAdapterSettings>
    <NetworkAdapter>
      <Network href="/networks/2" name="10.67.2.64/28" type="application/vnd.tmrk.cloud.network"/>
    </NetworkAdapter>
    <IpAddress>10.67.2.68</IpAddress>
  </NetworkAdapterSettings>
  <DetachedDisks>
    <DetachedDisk href="/detachedDisks/1" name="DetachedDisk1"
      type="application/vnd.tmrk.cloud.detachedDisk"/>
  </DetachedDisks>
</CreateBlankVirtualMachine>
```

Response

```
HTTP/1.1 201 Created
```

```
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/{virtual machine identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
      type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

    <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
      type="application/octet-stream" rel="down"/>

  </Links>

  <Actions>

    <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
      type="application/vnd.tmrk.cloud.virtualMachine"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

    <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
      type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>

    <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

    <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
      name="tools:unmount" actionDisabled="{noAccess | disabled}"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
      name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

    <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
      type="application/octet-stream"/>

  </Actions>
```

```
<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
 type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

 <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

  <Operation>CreateBlankVirtualMachine</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
   item acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
   domain part} | {API user family name}, {API user given name}}"
   type="application/vnd.tmrk.cloud.admin.user"/>

 </Task>

  ⋮

 <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Description>{textual description}</Description>

<Tags>

 <Tag>{user-defined tag}</Tag>

  ⋮

</Tags>

<Layout>

 <Row href="/layoutRows/{row identifier}" name="{row name}"
  type="application/vnd.tmrk.cloud.layoutRow"/>

 <Group href="/layoutGroups/{group identifier}" name="{group name}"
  type="application/vnd.tmrk.cloud.layoutGroup"/>

</Layout>

<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
 type="application/vnd.tmrk.cloud.networkHost"/>

<Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

<PoweredOn>{true | false}</PoweredOn>

<HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
 type="application/vnd.tmrk.cloud.virtualMachineHardware">

 <Actions>

  <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
   type="application/vnd.tmrk.cloud.virtualMachineHardware"/>

  <Action href="/virtualMachines/{virtual machine
   identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
   type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>
```

```
      <Action href="/virtualMachines/{virtual machine
        identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
        type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <Disks>
      <Disk>
        <Index>{disk index}</Index>
        <Size>
          <Unit>{unit of disk size value}</Unit>
          <Value>{disk size}</Value>
        </Size>
        <Name>{disk name}</Name>
      </Disk>
        ⋮
    </Disks>
    <Nics>
      <Nic>
        <UnitNumber>{network interface card number}</UnitNumber>
        <Name>{network interface card name}</Name>
        <MacAddress>{network interface card MAC address}</MacAddress>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <NetworkType>{Dmz | Internal}</NetworkType>
        </Network>
      </Nic>
        ⋮
    </Nics>
  </HardwareConfiguration>
  <IpAddresses>
    <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
      type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
      <Actions>
        <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
          type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
```

```
      </Actions>
      <Networks>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network">
          <IpAddresses>
            <IpAddress>{assigned IP address}</IpAddress>
              ⋮
          </IpAddresses>
        </Network>
          ⋮
      </Networks>
    </AssignedIpAddresses>
    <DetectedIpAddresses>
      <IpAddress>{detected IP address}</IpAddress>
        ⋮
    </DetectedIpAddresses>
  </IpAddresses>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
  <MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>
  <CustomizationPending>{true | false}</CustomizationPending>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 2689
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 12 Sep 2011 15:47:19 GMT
<VirtualMachine href="/virtualMachines/1" name="BlankVmName"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
```

```
    rel="up"/>
  <Link href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection"
    rel="down"/>
  <Link href="/virtualMachines/1/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
    type=collection" rel="down"/>
  <Link href="/virtualMachines/1/configurationOptions"
    type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
  <Link href="/virtualMachines/1/guest/action/files" type="application/octet-stream" rel="down"/>
</Links>
<Actions>
  <Action href="/virtualMachines/1" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"/>
  <Action href="/virtualMachines/1/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>
  <Action href="/virtualMachines/1" name="remove" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/powerOff" name="power:powerOff"/>
  <Action href="/virtualMachines/1/action/reboot" name="power:reboot"/>
  <Action href="/virtualMachines/1/action/shutdown" name="power:shutdown"/>
  <Action href="/virtualMachines/1/action/powerOn" name="power:powerOn" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/tools/action/mount" name="tools:mount"/>
  <Action href="/virtualMachines/1/tools/action/unmount" name="tools:unmount"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/guest/action/createProcess" name="createGuestProcess"
    type="application/vnd.tmrk.cloud.guest.process"/>
  <Action href="/virtualMachines/1/guest/action/files" name="createFile" type="application/octet-
    stream"/>
</Actions>
<Tasks href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection">
  <Task href="/tasks/833" type="application/vnd.tmrk.cloud.task">
    <Operation>Create Server</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/virtualMachines/1" name="BlankVmName"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-09-12T15:47:19.2065975Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <TotalCount>1</TotalCount>
</Tasks>
```

```
    <Description>This is my VM</Description>
    <Tags>
      <Tag>Tag 1</Tag>
      <Tag>Tag 2</Tag>
    </Tags>
    <Layout>
      <Row href="/layoutRows/4" name="NewRowName" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Group href="/layoutGroups/4" name="NewGroupName}" type="application/vnd.tmrk.cloud.layoutGroup"/>
    </Layout>
    <NetworkHost href="/networkHosts/1" name="VirtualMachine1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Status>NotDeployed</Status>
    <PoweredOn>false</PoweredOn>
    <MediaStatus>Unmounted</MediaStatus>
    <CustomizationPending>false</CustomizationPending>
  </VirtualMachine>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.13 Action Virtual Machines Import

The Action Virtual Machines Import call creates a virtual machine from a catalog item in the compute pool. If successful, the call returns information regarding the virtual machine that was created.

The `name` attribute on <ImportVirtualMachine … > is required.

Note: The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<ProcessorCount> is required and refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Memory> is required. Permitted values are in megabytes and must be evenly divisible by 4.

<Layout> is required. Only one of three variations is permitted in a call:

1. Add to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be added.

2. Add to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

3. Add to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be added.

<Description> is optional but if present the description must not exceed one hundred characters.

<Tags> is optional but is permitted to be empty if no tags are desired on the virtual machine.

The `href` attribute is required on <CatalogEntry … >, which is itself required, to identify the catalog item to import when creating the virtual machine.

<NetworkMappings>, <NetworkMapping … >, and <Network … > are required. The `name` attribute is required on <NetworkMapping … > and must match the <Name> of one <NetworkMapping> in the <NetworkAdapters> of the catalog configuration in the response to **Get Catalog Configuration**. The `href` attribute is required on <Network … > to identify the network to which to assign the virtual machine when created.

<OperatingSystem> is optional and provides an override for a catalog item with an operating system unsupported in the target location.

If a catalog item has an operating system unsupported by the compute pool location into which the catalog item is imported, the operating system identified in <OperatingSystem> will be substituted. If <OperatingSystem> is not provided or neither is supported, the import will fail.

Note: <OperatingSystem> is ignored if the operating system for the catalog item is supported in the target location.

<NetworkHosts> provides a fast path to the utilization of the virtual machine.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.

- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

<MediaStatus> is the status of the VMware Tools media; permitted values are:

- **Unmounted** – No media is mounted on the virtual machine.
- **IsoMounted** –Media is with an ISO image is mounted on the virtual machine.
- **VMwareToolsMounted** – VMware Tools media is mounted on the virtual machine.

<DetectedIpAddresses> are IP addresses detected on the virtual machine but not assigned to the virtual machine in the Enterprise Cloud.

<HardwareConfiguration … >, which is defined in the catalog item and therefore exists on the imported virtual machine, will not appear in the response if the task is not complete, which is the normal situation.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Request

```
POST http://{Terremark URI}/virtualMachines/computePools/{compute pool identifier}/ …
  action/importVirtualMachine
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/computePools/1/ …
```

```
action/importVirtualMachine
```

Body

```
<ImportVirtualMachine name="{virtual machine name}"> <!-- name is required -->
  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount> <!-- Required -->
  <Memory> <!-- Required -->
    <Unit>{unit of memory value}</Unit>
    <Value>{memory size}</Value>
  </Memory>
  <!-- Only one form of the <Layout> is permitted -->
  <Layout> <!-- Required – existing group -->
    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <Layout> <!-- Required – existing row, new group -->
    <Row href="/layoutRows/{row identifier}"
     type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Layout> <!-- Required – new row, new group -->
    <NewRow>{row name}</NewRow> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </Layout>
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user defined tag}</Tag>
      ⋮
  </Tags>
  <CatalogEntry href="/admin/catalog/{catalog identifier}"/> <!-- Required -->
  <NetworkMappings> <!-- Required -->
    <NetworkMapping name="{network name}"> <!-- Required -->
      <Network href="/networks/{network identifier}"/> <!-- Required -->
    </NetworkMapping>
  </NetworkMappings>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
   identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
   <!-- Optional -->
</ImportVirtualMachine>
```

EXAMPLE

```
<ImportVirtualMachine name="VMName">
  <ProcessorCount>2</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>1024</Value>
  </Memory>
  <Layout>
    <NewRow>NewRowName</NewRow>
    <NewGroup>NewGroupName}</NewGroup>
  </Layout>
  <Description>My Description</Description>
  <Tags>
    <Tag>Web</Tag>
  </Tags>
  <CatalogEntry href="/admin/catalog/1"/>
  <NetworkMappings>
    <NetworkMapping name="Network Name">
      <Network href="/networks/4"/>
    </NetworkMapping>
  </NetworkMappings>
  <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003 Enterprise
    Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
</ImportVirtualMachine>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/{virtual machine identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <Link href="/tasks/virtualMachines/{virtual machine identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>
```

```
  <Link href="/virtualMachines/{virtual machine identifier}/guest/processes"
    type="application/vnd.tmrk.cloud.guest.process; type=collection" rel="down"/>

  <Link href="/virtualMachines/{virtual machine identifier}/configurationOptions"
    type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>

  <Link href="/virtualMachines/{virtual machine identifier}/guest/action/files"
    type="application/octet-stream" rel="down"/>

</Links>

<Actions>

  <Action href="/virtualMachines/{virtual machine identifier}" name="edit"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  <Action href="/virtualMachines/{virtual machine identifier}" name="remove" actionDisabled="{noAccess
    | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/powerOff" name="power:powerOff"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/reboot" name="power:reboot"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/shutdown" name="power:shutdown"/>

  <Action href="/virtualMachines/{virtual machine identifier}/action/powerOn" name="power:powerOn"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/tools/action/mount" name="tools:mount"/>

  <Action href="/virtualMachines/{virtual machine identifier}/tools/action/unmount"
    name="tools:unmount" actionDisabled="{noAccess | disabled}"/>

  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/createProcess"
    name="createGuestProcess" type="application/vnd.tmrk.cloud.guest.process"/>

  <Action href="/virtualMachines/{virtual machine identifier}/guest/action/files" name="createFile"
    type="application/octet-stream"/>

</Actions>

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>importVirtualMachine</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
```

```
      type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
     ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Description>{textual description}</Description>
  <Tags>
    <Tag>{user-defined tag}</Tag>
     ⋮
  </Tags>
  <Layout>
    <Row href="/layoutRows/{row identifier}" name="{row name}"
     type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/{group identifier}" name="{group name}"
     type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
    type="application/vnd.tmrk.cloud.networkHost"/>
  <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
  <PoweredOn>{true | false}</PoweredOn>
  <HardwareConfiguration href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration"
    type="application/vnd.tmrk.cloud.virtualMachineHardware">
    <Actions>
      <Action href="/virtualMachines/{virtual machine identifier}/hardwareConfiguration" name="edit"
       type="application/vnd.tmrk.cloud.virtualMachineHardware"/>
      <Action href="/virtualMachines/{virtual machine
       identifier}/hardwareConfiguration/disks/actions/detach" name="detachDisks"
       type="application/vnd.tmrk.cloud.detachDisks" actionDisabled="{noAccess | disabled}"/>
      <Action href="/virtualMachines/{virtual machine
       identifier}/hardwareConfiguration/disks/actions/attach" name="attachDisks"
       type="application/vnd.tmrk.cloud.attachDisks" actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <Disks>
      <Disk>
        <Index>{disk index}</Index>
```

```
      <Size>
        <Unit>{unit of disk size value}</Unit>
        <Value>{disk size}</Value>
      </Size>
      <Name>{disk name}</Name>
    </Disk>
      ⋮
  </Disks>
  <Nics>
    <Nic>
      <UnitNumber>{network interface card number}</UnitNumber>
      <Name>{network interface card name}</Name>
      <MacAddress>{network interface card MAC address}</MacAddress>
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">
        <NetworkType>{Dmz | Internal}</NetworkType>
      </Network>
    </Nic>
      ⋮
  </Nics>
</HardwareConfiguration>
<IpAddresses>
  <AssignedIpAddresses href="/virtualMachines/{virtual machine identifier}/assignedIps"
    type="application/vnd.tmrk.cloud.virtualMachineAssignedIps">
    <Actions>
      <Action href="/virtualMachines/{virtual machine identifier}/assignedIps" name="edit"
        type="application/vnd.tmrk.cloud.virtualMachineAssignedIps"/>
    </Actions>
    <Networks>
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>{assigned IP address}</IpAddress>
            ⋮
        </IpAddresses>
      </Network>
        ⋮
    </Networks>
```

```
    </AssignedIpAddresses>
    <DetectedIpAddresses>
      <IpAddress>{detected IP address}</IpAddress>
        ⋮
    </DetectedIpAddresses>
  </IpAddresses>
  <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
  <MediaStatus>{Unmounted | IsoMounted | VmwareToolsMounted}</MediaStatus>
  <CustomizationPending>{true | false}</CustomizationPending>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</VirtualMachine>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 3441
  Content-Type: application/vnd.tmrk.cloud.virtualMachine
  Location: /virtualMachines/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 13 Jun 2011 23:17:25 GMT
<VirtualMachine href="/virtualMachines/1" name="Virtual Machine 1"
  type="application/vnd.tmrk.cloud.virtualMachine" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>
    <Link href="/virtualMachines/1/guest/processes" type="application/vnd.tmrk.cloud.guest.process;
      type=collection" rel="down"/>
    <Link href="/virtualMachines/1/configurationOptions"
      type="application/vnd.tmrk.cloud.virtualMachineConfigurationOptions" rel="down"/>
    <Link href="/virtualMachines/1/guest/action/files" type="application/octet-stream" rel="down"/>
  </Links>
  <Actions>
    <Action href="/virtualMachines/1" name="edit" type="application/vnd.tmrk.cloud.virtualMachine"/>
    <Action href="/virtualMachines/1/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>
```

```
  <Action href="/virtualMachines/1" name="remove" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/export" name="export"
    type="application/vnd.tmrk.cloud.exportVirtualMachine" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/action/powerOff" name="power:powerOff"/>
  <Action href="/virtualMachines/1/action/reboot" name="power:reboot"/>
  <Action href="/virtualMachines/1/action/shutdown" name="power:shutdown"/>
  <Action href="/virtualMachines/1/action/powerOn" name="power:powerOn" actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/tools/action/mount" name="tools:mount"/>
  <Action href="/virtualMachines/1/tools/action/unmount" name="tools:unmount"
    actionDisabled="disabled"/>
  <Action href="/virtualMachines/1/guest/action/createProcess" name="createGuestProcess"
    type="application/vnd.tmrk.cloud.guest.process"/>
  <Action href="/virtualMachines/1/guest/action/files" name="createFile" type="application/octet-
    stream"/>
</Actions>
<Tasks href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection">
  <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">
    <Operation>importVirtualMachine</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/virtualMachines/1" name="VirtualMachine1"
      type="application/vnd.tmrk.cloud.createVirtualMachine"/>
    <StartTime>2011-06-21T15:00:32.35Z</StartTime>
    <CompletedTime 2011-06-21T15:02:32.35Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <TotalCount>1</TotalCount>
</Tasks>
<Description>My Description</Description>
<Tags>
  <Tag>Web</Tag>
</Tags>
<Layout>
  <Row href="/layoutRows/4" name="NewRowName" type="application/vnd.tmrk.cloud.layoutRow"/>
  <Group href="/layoutGroups/4" name="NewGroupName}" type="application/vnd.tmrk.cloud.layoutGroup"/>
</Layout>
<NetworkHost href="/networkHosts/1" name="VirtualMachine1"
  type="application/vnd.tmrk.cloud.networkHost"/>
<Status>NotDeployed</Status>
```

```
    <PoweredOn>false</PoweredOn>
    <MediaStatus>Unmounted</MediaStatus>
    <CustomizationPending>false</CustomizationPending>
  </VirtualMachine>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.14 Action Virtual Machines Export

The Action Virtual Machines Export call creates a catalog item in the catalog from a virtual machine. If successful, the call returns information regarding the catalog item that was created.

The Action Virtual Machines Export call also creates a task regarding the source virtual machine that was exported. To view or monitor the task on the virtual machine that was exported, use **Get Tasks by Virtual Machine** for the source virtual machine (on the source <VirtualMachine> entity select the <Link> with a `type` of `task`; `type=collection` and follow the `href`) and search for the task with <Operation>Export Server</Operation>.

Note: The source virtual machine must have a <PoweredOn> value of `false` and must not have a <Status> value of `TaskInProgress` or `CopyInProgress`.

Both <ExportVirtualMachine> and <CatalogName> are required.

Note: <CatalogName>may not be that of another catalog item and must not exceed fifty characters.

<CatalogType> refers to the source operation for the catalog item. Permitted values are:

- **Upload** –Catalog item was uploaded to the catalog from the organization.
- **Export** - Catalog item was exported to the catalog from a virtual machine in the environment.

Request

```
  POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/export
```

EXAMPLE

```
  POST http://services.enterprisecloud.terremark.com/virtualMachines/2/action/export
```

Body

```
  <ExportVirtualMachineRequest> <!-- Required -->
    <CatalogName>{name of catalog item created}</CatalogName> <!-- Required -->
  </ExportVirtualMachineRequest>
```

EXAMPLE

```
  <ExportVirtualMachineRequest>
    <CatalogName>WebServerTemplate</CatalogName>
```

```
</ExportVirtualMachineRequest>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<CatalogEntry href="/admin/catalog/{catalog identifier}" name="{catalog name}"
  type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/catalog/{catalog identifier}" name="remove"/>

  </Actions>

  <Tasks>

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>Create Export Catalog Item</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>

      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

  </Tasks>

  <Status>{Active | Validated | Failed | Completed | Validating}</Status>

  <Alerts>

    <Alert>

      <Type>{Info | Warning | Error}</Type>

      <Details>{alert detail message}</Details>

    </Alert>
```

```
      ⋮
    </Alerts>
    <Files>
      <File>
        <UploadUrl>{opaque file reference}</UploadUrl>
        <Name>{uploaded file name}</Name>
        <Size>
          <Unit>{unit of size value}</Unit>
          <Value>{file size}</Value>
        </Size>
        <BytesTransferred>{bytes uploaded}</BytesTransferred>
        <Status>{Ready | InProgress | Failed | Verified | Completed}</Status>
      </File>
        ⋮
    </Files>
    <Configuration href="/admin/catalog/{catalog identifier}/configuration"
      type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
    <CatalogType>{Upload | Export}</CatalogType>
  </CatalogEntry>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 1306
    Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry
    Location: /admin/catalog/382
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Mon, 19 Dec 2011 20:04:10 GMT
  <CatalogEntry href="/admin/catalog/382" name="Catalog Item 382"
    type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/catalog/382" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Tasks>
```

```
      <Task href="/tasks/384" type="application/vnd.tmrk.cloud.task">
        <Operation>Create Export Catalog Item</Operation>
        <Status>Queued</Status>
        <ImpactedItem href="/admin/catalog/382" name="Catalog Item 382"
          type="application/vnd.tmrk.cloud.admin.catalogEntry"/>
        <StartTime>2011-12-19T20:04:10.1786159Z</StartTime>
        <Notes>Some notes about the operation.</Notes>
        <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
      </Task>
      <TotalCount>1</TotalCount>
    </Tasks>
    <Status>Active</Status>
    <Configuration href="/admin/catalog/382/configuration"
      type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
    <CatalogType>Export</CatalogType>
  </CatalogEntry>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.15 Action Virtual Machines Edit

The Action Virtual Machines Edit call edits the name, description, or tags on a virtual machine defined in an environment. If successful and the name is changed, even if the description or tags are also changed, a 202 Accepted header is returned with the task that changed the virtual machine name. If successful and only the description or tags are changed (the name is not changed), a 204 No Content header is returned.

The `name` attribute on <VirtualMachine … > is required.

Note: The name is case insensitive. If only the case is changed on the name a 210 header will be returned.

Note: The `name` may not be that of another virtual machine; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: The description is case insensitive. If only the case is changed a 210 header will be returned.

Note: To remove the description an empty element, <Description/>, must be in the body.

Both <Tags> and <Tag> are optional. Including a <Tag> not currently on the virtual machine adds that tag to the virtual machine.

Note: If the virtual machine has tags and <Tags> is empty, all tags are removed. Similarly, if any <Tag> subordinate elements are valued on the virtual machine and not present in the call, that tag is removed from the virtual machine. If the virtual machine has tags and <Tags> is not present in the call, no change is made to the tags.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/virtualMachines/4
```

Body

```
<VirtualMachine name="{virtual machine name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional, if absent removes all tags -->
    <Tag>{user-assigned tag}</Tag> <!-- Optional, if absent removes that tag -->
      ⋮
  </Tags>
</VirtualMachine>
```

EXAMPLE

```
<VirtualMachine name="WebVM">
  <Description>This is my VM</Description>
  <Tags>
    <Tag>Web</Tag>
    <Tag>Server</Tag>
  </Tags>
</VirtualMachine>
```

Response

1. If the name is changed

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 535
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 13 Jun 2011 16:39:17 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/1" name="Web Virtual Machine"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-13T16:39:16.9920835Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

2. If the name is not changed:

```
HTTP/1.1 204 No Content
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 07 Nov 2011 20:33:41 GMT
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.16 Action Virtual Machines Edit Assigned IP Address

The Action Virtual Machines Edit Assigned IP Address call edits the IP addresses assigned to a virtual machine defined in an environment. If successful, the call returns the task that modified the virtual machine.

Note: To change networks or assigned IP addresses on a virtual machine requires a <Status> of `Deployed`.

The `href` attribute is required on the element <Network … > to identify to which network the assigned IP address belongs.

Both <Network> and <IpAddress> are optional. Including a <Network> or <IpAddress> not currently on the virtual machine adds that network or IP address to the virtual machine.

Note: If a <Network> is valued on the virtual machine and is not present in the call, that network and all assigned IP addresses for that network are removed. Similarly, if an <IpAddress> is valued on the virtual machine and not present in the call, that IP address is removed from the network.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
PUT http://{Terremark URI}/virtualMachines/{virtual machine identifier}/assignedIps
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/virtualMachines/2/assignedIps
```

Body

```
<AssignedIpAddresses>
  <Networks> <!-- Required -->
    <Network href="/networks/{network identifier}"
      type="application/vnd.tmrk.cloud.network"> <!-- Optional, if absent removes that network -->
      <IpAddresses>
        <IpAddress>{IP address}</IpAddress> <!-- Optional, if absent removes that IP address -->
          ⋮
      </IpAddresses>
    </Network>
      ⋮
  </Networks>
</AssignedIpAddresses>
```

EXAMPLE

```
<AssignedIpAddresses>
  <Networks>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <IpAddresses>
        <IpAddress>10.0.4.34</IpAddress>
        <IpAddress>10.0.4.37</IpAddress>
      </IpAddresses>
    </Network>
  </Networks>
</AssignedIpAddresses>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
  <Operation>Configure Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
   acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
   domain part} | {API user family name}, {API user given name}}"
   type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 542
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 13 Jun 2011 17:09:27 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/2/hardwareConfiguration"
   type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-13T17:09:27.1764384Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.17 Action Virtual Machines Edit Hardware Configuration

The Action Virtual Machines Edit Hardware Configuration call edits the processor count, memory, storage, and network adapters of a virtual machine defined in an environment. If successful, the call returns the task that modified the virtual machine.

Note: To configure a virtual machine requires a <Status> value of `Deployed`.

The virtual machine must be powered off to change the processor count, memory, and network adapters. The virtual machine must be powered off to remove a disk from a virtual machine. The storage capacity may be changed with the virtual machine powered on or powered off.

Note: The storage capacity of a disk drive may only be increased on a virtual machine.

The first <Disk> is the system disk and is required. Subsequent <Disk> elements are optional. No more than fifteen disks may be defined. Within a disk, <Index> is optional and ignored if present. It is an integer with the first disk set to zero and incremented for each additional disk. <Size> is required. <Unit> is required and will be "GB" for disks. <Value> is required and must be greater than zero and less than 512. <Name> is optional and ignored if present.

Note: The first hard disk on a virtual machine is the system disk and may not be removed. If a <Disk> is valued on a virtual machine and is not present in the call, that disk is removed from the virtual machine.

The `href` attribute is required on <Network … > to identify to which network the network adapter is attached.

<Name> under both <Disk> and <Nic> is optional and ignored if present. Names for disks and network adapters are internally assigned and may not be changed.

<Nic> is optional. Including a <Nic> not currently on the virtual machine, based on the subordinate <UnitNumber>, adds that network adapter to the virtual machine.

Note: If a network adapter is valued on a virtual machine and the <Nic> for that network adapter is not present in the call, that network adapter and all assigned IP addresses for that network adapter are removed.

<NetworkType> is optional and ignored if present.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Live Specification Test Values

Condition	Outcome
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Condition	Outcome
virtual machine identifier mod 7 = 0	Has tasks running
Disk size ≥ 50GB	Insufficient disk space error
Processor, memory, disk sizes	Within the range and step factor found in response to **Get Virtual Machines Configuration Options**

Request

```
PUT http://{Terremark URI}/virtualMachines/{virtual machine identifier}/hardwareConfiguration
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/virtualMachines/2/hardwareConfiguration
```

Body

```
<HardwareConfiguration>
  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount> <!-- Required -->
  <Memory> <!-- Required -->
    <Unit>{unit of memory value}</Unit> <!-- Required -->
    <Value>{memory size}</Value> <!-- Required -->
  </Memory>
  <Disks> <!-- Required -->
    <Disk> <!-- Required -->
      <Index>{disk index}</Index> <!-- Optional, ignored if present -->
      <Size> <!-- Required -->
        <Unit>{unit of disk size value}</Unit> <!-- Required -->
        <Value>{disk size}</Value> <!-- Required -->
      </Size>
      <Name>{disk name}</Name> <!--Optional, ignored if present -->
    </Disk>
    <Disk> <!-- Optional, if absent removes that disk -->
      <Index>{disk index}</Index> <!-- Required -->
      <Size> <!-- Required -->
        <Unit>{unit of disk size value}</Unit> <!-- Required -->
        <Value>{disk size}</Value> <!-- Required -->
      </Size>
      <Name>{disk name}</Name> <!--Optional, ignored if present -->
    </Disk>
      ⋮
  </Disks>
```

```
    <Nics>
      <Nic> <!-- Optional, if absent removes that network -->
        <UnitNumber>{network interface card number}</UnitNumber> <!-- Required -->
        <Name>{network interface card name}</Name> <!--Optional, ignored if present -->
        <MacAddress>{network interface card MAC address}</MacAddress>
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network"> <!-- Required -->
          <NetworkType>{Dmz | Internal}</NetworkType> <!--Optional, ignored if present -->
        </Network>
      </Nic>
        ⋮
    </Nics>
  </HardwareConfiguration>
```

EXAMPLE

```
  <HardwareConfiguration>
    <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Disks>
      <Disk>
        <Index>0</Index>
        <Size>
          <Unit>GB</Unit>
          <Value>2</Value>
        </Size>
        <Name>Disk 1</Name>
      </Disk>
      <Disk>
        <Index>1</Index>
        <Size>
          <Unit>GB</Unit>
          <Value>100</Value>
        </Size>
        <Name>Disk 2</Name>
      </Disk>
```

```
  </Disks>
  <Nics>
    <Nic>
      <UnitNumber>0</UnitNumber>
      <Name>Network Adapter1</Name>
      <MacAddress>00:00:00:00:00:00:01</MacAddress>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
    </Nic>
    <Nic>
      <UnitNumber>1</UnitNumber>
      <Name>Network Adapter2</Name>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
    </Nic>
  </Nics>
</HardwareConfiguration>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 542
  Content-Type: application/vnd.tmrk.cloud.task
```

```
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 13 Jun 2011 19:50:31 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/2/hardwareConfiguration"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-13T19:50:31.7658007Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.18 Action Virtual Machines Detach Disk

The Action Virtual Machines Detach Disk call detaches a disk from a virtual machine. If successful, the call returns information regarding the disk detached.

The `name` attribute on <DetachedDisk … > is required.

Note: The `name` may not be that of another detached disk and must not exceed fifteen characters.

<Disk> and the subordinate <Index> are required.The subordinate <Size> and <Name> are optional and ignored if present.

Note: The system disk, the disk with <index>0</Index>, may not be detached.

Live Specification Test Values

Condition	Outcome
virtual machine identifier = 0	Virtual machine not found error
virtual machine identifier = 2	Powered on error
virtual machine identifier = 3	Other task in progress error
virtual machine identifier = 7	Detach in progress error

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine
  identifier}/hardwareConfiguration/disks/actions/detach
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/1/hardwareConfiguration/disks/ …
```

```
actions/detach
```

Body

```
<DetachedDisk name="{detached disk name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Disk> <!-- Required -->
    <Index>0</Index> <!-- Required -->
    <Size> <!-- Optional, ignored if present -->
      <Unit>{unit of disk size value}</Unit>
      <Value>{disk size}</Value>
    </Size>
    <Name>{disk name}</Name> <!-- Optional, ignored if present -->
  </Disk>
</DetachDisk>
```

EXAMPLE

```
<DetachDisk name="Detached Disk 1">
  <Description>My detached disk description</Description>
  <Disk>
    <Index>1</Index>
  </Disk>
</DetachDisk>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.detachedDisk
  Location: /detachedDisks/1
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
  type="application/vnd.tmrk.cloud.detachedDisk" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">>
  <Links>
    <Link href="/computePools/{compute pool identifier}" name="{compute pool name}"
      type="application/vnd.tmrk.cloud.computePool" rel="up"/>
  </Links>
  <Actions>
    <Action href="/detachedDisks/{detached disk identifier}" name="edit"
      type="application/vnd.tmrk.cloud.detachedDisk" actionDisabled="{noAccess | disabled}"/>
    <Action href="/detachedDisks/{detached disk identifier}" name="remove" actionDisabled="{noAccess |
```

```
    disabled}"/>
  </Actions>
  <Tasks href="/tasks/detachedDisks/{task identifier}" type="application/vnd.tmrk.cloud.task;
   type=collection">
   <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
     item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
     domain part} | {API user family name}, {API user given name}}"
     type="application/vnd.tmrk.cloud.admin.user"/>
   </Task>
    ⋮
   <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Description>{textual description}</Description>
  <LastKnownVirtualMachineConfiguration name="{virtual machine name}">
   <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
   <Memory>
    <Unit>{unit of memory value}</Unit>
    <Value>{memory size}</Value>
   </Memory>
   <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
    identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </LastKnownVirtualMachineConfiguration>
  <Type>{System | Data}</Type>
  <Size>
   <Unit>{unit of disk size value}</Unit>
   <Value>{disk size}</Value>
  </Size>
  <Status>{Available | AttachInProgress | DetachInProgress}</Status>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
   attachDiskRetryOperations}/detachedDisks/{detached disk identifier}"
   type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
```

```
</DetachedDisk>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 1669
  Content-Type: application/vnd.tmrk.cloud.detachedDisk
  Location: /detachedDisks/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 Jan 2012 21:31:04 GMT

<DetachedDisk href="/detachedDisks/1" name="Detached Disk 1"
  type="application/vnd.tmrk.cloud.detachedDisk" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/detachedDisks/1" name="edit" type="application/vnd.tmrk.cloud.detachedDisk"
      actionDisabled="disabled"/>

    <Action href="/detachedDisks/1" name="remove" actionDisabled="disabled"/>

  </Actions>

  <Tasks href="/tasks/detachedDisks/1" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">

      <Operation>Detach Disk</Operation>

      <Status>Queued</Status>

      <ImpactedItem href="/detachedDisks/1" name="DetachedDisk 1"
        type="application/vnd.tmrk.cloud.detachedDisk"/>

      <StartTime>2012-01-12T21:31:04.2199981Z</StartTime>

      <Notes>Some notes about the operation.</Notes>

      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <TotalCount>1</TotalCount>

  </Tasks>

  <Description>My detached disk description</Description>

  <LastKnownVirtualMachineConfiguration name="VM 1">

    <ProcessorCount>2</ProcessorCount>

    <Memory>

      <Unit>GB</Unit>

      <Value>8</Value>

    </Memory>

    <OperatingSystem href="/operatingSystems/windows%202003%20enterprise%20edition/computePools/1"
```

```
      name="win2003ent" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </LastKnownVirtualMachineConfiguration>
    <Type>Data</Type>
    <Size>
      <Unit>GB</Unit>
      <Value>4</Value>
    </Size>
    <Status>DetachInProgress</Status>
  </DetachedDisk>
```

Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.19 Action Virtual Machines Attach Disk

The Action Virtual Machines Attach Disks call attaches a previously detached disk to a virtual machine. If successful, the call returns a task regarding the virtual machine to which the disk or disks were attached.

At least one <DetachedDisk … > is required and the `href` attribute on each <DetachedDisk … > is required to identify the detached disk desired to attach. With version 2012-03-01, only one disk may be attached in a call.

Live Specification Test Values

Condition	Outcome
virtual machine identifier = 0	Virtual machine not found error
virtual machine identifier = 2	Powered on error
virtual machine identifier = 3	Other task in progress error
virtual machine identifier = 5	Invalid disk count error
detached disk identifier = 0	Detached disk not found error
detached disk identifier = 2	Detached disk not detached error
detached disk identifier = 3	Detached disk attach or detach in progress error

Request

```
  POST http://{Terremark URI}/virtualMachines/{virtual machine
    identifier}/hardwareConfiguration/disks/actions/attach
```

EXAMPLE

```
  POST http://services.enterprisecloud.terremark.com/virtualMachines/1/hardwareConfiguration/disks/ …
    actions/attach
```

Body

```
  <AttachDisks>
    <DetachedDisks>
```

```
    <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk"/>

    ⋮

  </DetachedDisks>

</AttachDisks>
```

EXAMPLE

```
<AttachDisks>

  <DetachedDisks>

    <DetachedDisk href="/detachedDisks/1" name="DetachedDisk1"
      type="application/vnd.tmrk.cloud.detachedDisk"/>

  </DetachedDisks>

</AttachDisks>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Attach Disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 14:49:49 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
```

```
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Attach Disk</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/virtualMachines/1" type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2012-01-13T14:49:50.6747678Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.20 Action Virtual Machines Edit Upgrade Hardware Version

The Action Virtual Machines Edit Upgrade Hardware Version call upgrades a virtual machine to the new version of ESX in an environment. If successful, the call returns the task that modified the virtual machine.

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/upgradeHardware
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/102/action/upgradeHardware
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Upgrade Hardware Version</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
  <ErrorMessage>{error message}</ErrorMessage>
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
```

```
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>
```

EXAMPLE

```
  HTTP/1.1 202 Accepted
    Content-Length: 516
    Content-Type: application/vnd.tmrk.cloud.task
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Mon, 03 Oct 2011 15:44:06 GMT

  <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>Upgrade Hardware Version</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/virtualMachines/102" type="application/vnd.tmrk.cloud.virtualMachine"/>

    <StartTime>2011-10-03T15:44:06.4351748Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.21 Action Virtual Machines Move

The Action Virtual Machines Move call moves the virtual machine to a different layout group. If successful, the call returns a 204 No Content header.

Three options are possible:

1. The virtual machine may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
2. The virtual machine may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
3. The virtual machine may be moved to a new layout group created in a new row created in the layout of the environment.

<LayoutRequest> has three variations. Only one of the three variations is permitted in a call:

1. Move to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the virtual machine will be moved.

2. Move to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be moved.

3. Move to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the virtual machine will be moved.

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/move
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/4/action/move
```

Body

1. Add to an existing group.

```
<LayoutRequest>
  <Group href="/layoutGroups/{group identifier}"
    type="application/vnd.tmrk.cloud.layoutGroup"/> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Group href="/layoutGroups/1" type="application/vnd.tmrk.cloud.layoutGroup"/>
</LayoutRequest>
```

2. Add to a newly created group in an existing row.

```
<LayoutRequest>
  <Row href="/layoutRows/{row identifier}"
    type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Row href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow"/>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

3. Add to a newly created group in a newly created row.

```
<LayoutRequest>
  <NewRow>{row name}</NewRow> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <NewRow>MyNewRowName</NewRow>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 13 Jun 2011 20:01:00 GMT
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.22 Action Virtual Machines Power On

The Action Virtual Machines Power On call powers on a specified virtual machine. If successful, the call returns the task that powered on the virtual machine.

Note: To power on requires a <PoweredOn> value of `false`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/powerOn
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/4/action/powerOn
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Power on Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 14:13:52 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Power on Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/4" type="application/vnd.tmrk.cloud.virtualMachine"/>
```

```
  <StartTime>2011-06-14T14:13:52.164588Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.23 Action Virtual Machines Power Off

The Action Virtual Machines Power Off call powers off a specified virtual machine. Power off simply terminates the virtual machine whereas shutdown requests the virtual machine to end all processes and turn itself off when all processes complete. If successful, the call returns the task that powered off the virtual machine.

Note: To power off requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/powerOff
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/action/powerOff
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Power off Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>
```

```
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 15:17:53 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Power off Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/3" type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-14T15:17:53.0046336Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.24 Action Virtual Machines Power Reboot

The Action Virtual Machines Power Reboot call reboots a specified virtual machine. Reboot is equivalent to pressing the reset button on a computer. If successful, the call returns the task that rebooted the virtual machine.

Note: To reboot requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier = 1	VMware Tools status `Current`
virtual machine identifier mod 5 = 0	VMware Tools status `NotInstalled`
virtual machine identifier mod 4 = 0	VMware Tools status `NotRunning`
virtual machine identifier mod 3 = 0	VMware Tools status `OutOfDate`

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/reboot
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/action/reboot
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Restart Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 15:32:21 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Restart Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/3" type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-14T15:32:21.6364881Z</StartTime>
```

```
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.25 Action Virtual Machines Power Shutdown

The Action Virtual Machines Power Shutdown call shuts down a specified virtual machine. Shutdown requests the virtual machine to end all processes and turn itself off when all processes complete whereas power off simply terminates the virtual machine. If successful, the call returns the task that shut down the virtual machine.

Note: To shutdown requires a <ToolsStatus> value of `Current` or `OutOfDate` and a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier = 1	VMware Tools status `Current`
virtual machine identifier mod 5 = 0	VMware Tools status `NotInstalled`
virtual machine identifier mod 4 = 0	VMware Tools status `NotRunning`
virtual machine identifier mod 3 = 0	VMware Tools status `OutOfDate`

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/action/shutdown
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/1/action/shutdown
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Shutdown Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
```

```
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
  <ErrorMessage>{error message}</ErrorMessage>
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 15:32:21 GMT
<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Shutdown Server</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/virtualMachines/1" type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-06-14T15:32:21.6364881Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.26 Action Virtual Machines Guest Process

The Action Virtual Machines Guest Process call logs in to the guest operating system and creates a process on a specified virtual machine. To view any output from the process, send all output to a file and retrieve the file contents from the guest operating system. If successful, the call returns information regarding the process that was created.

To run a program, specify the path and program in <ProgramPath> and any arguments in <Arguments>. Omit <Script> and <Interpreter>.

To run a script, enter the contents of the script in <Script>. The system will take whatever text is in <Script>, write it to a temporary file, and invoke the interpreter specified in <Interpreter> passing the file as an argument. To use cmd.exe as the desired interpreter on Windows, pass an empty <Interpreter/>. Omit <ProgramPath> and <Arguments>.

Use the returned process information to find the process in the response of **Get Virtual Machines Guest Processes**.

Note:

- The Action Virtual Machine Guest Process call requires valid credentials for a user with permission to create the process on the virtual machine. Pass the credentials in the `X-Guest-User` and `X-Guest-Password` header fields as described in *5.5 Header*.
- If both a script and program are specified, then the program will take precedence and the script information will be ignored.
- To run a process on a virtual machine requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/guest/action/createProcess
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/guest/action/createProcess
```

Body

```
<CreateGuestProcess>
  <ProgramPath>{program path and name}</ProgramPath> <!-- Optional -->
  <Arguments>{program arguments}</Arguments> <!-- Optional -->
  <Interpreter>{command interpreter}</Interpreter> <!-- Optional -->
  <Script>{script text}</Script> <!-- Optional -->
</CreateGuestProcess>
```

EXAMPLE

```
path
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<GuestProcess xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Name>{process name}</Name>
```

```
  <ProcessId>{process identifier}</ProcessId>
</GuestProcess>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 126
  Content-Type: application/vnd.tmrk.cloud.guest.process
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 18:03:55 GMT
<GuestProcess xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Name>process1</Name>
  <ProcessId>1</ProcessId>
</GuestProcess>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.27 Action Virtual Machines Guest File

The Action Virtual Machines Guest File call logs in as a guest and uploads a file to a specified virtual machine. The actual bytes to upload are placed in the body of the message. The call places the body of the message in the path and filename specified in the `path` query part of the URL. The request body is the binary segment of the file that matches the offset information in the Content-Range header. If successful, the call returns a 200 OK header.

Note:

- The Action Virtual Machine Guest File call requires valid credentials for a user with permission to place a file on the path on the virtual machine. Pass the credentials in the `X-Guest-User` and `X-Guest-Password` header fields as described in *5.5 Header*.
- The `path` query part of the URL requires a fully qualified path, also called absolute path, to the filename.
- The Content-Type header field for this call must be `application/octet-stream` as described in *5.5 Header*.
- The Content-Range header field is required as described in *5.5 Header*.
- The offset specified in the Content-Range header field is zero-based.
- The total size of the message, request, headers, and body, may not exceed 2MB.
- To run a process on a virtual machine requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine
```

```
  identifier}/guest/action/files?path={filePath}
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/guest/action/ …
  files?path=C:\Upload\npp.exe
```

Body

```
[Bytes to upload]
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 24 Jun 2011 15:34:58 GMT
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.28 Action Virtual Machines Tools Mount

The Action Virtual Machines Tools Mount call mounts the virtual volume for VMware Tools on a specified virtual machine. If successful, the call returns the task that mounted the tools.

Note: To mount VMware Tools requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier mod 4 = 0	VMware Tools media `Mounted`

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/tools/action/mount
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/tools/action/mount
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Mount Tools</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 485
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 19:46:32 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Mount Tools</Operation>

  <Status>Complete</Status>

  <ImpactedItem href="/virtualMachines/3" type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-14T19:46:32.072038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.29 Action Virtual Machines Tools Install

The Action Virtual Machines Tools Install call installs VMware Tools on a specified virtual machine. If successful, the call returns the task that installed the tools.

This call is not implemented in API release 2.11 and returns:

```
501 Not Implemented
  Content-Length: 115
  Content-Type: application/vnd.tmrk.cloud.error
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Error message="The method or operation is not implemented." majorErrorCode="501"
  minorErrorCode="NotImplemented"/>
```

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/tools/action/install
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/3/tools/action/install
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Install Tools</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 19:38:40 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Install Tools</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/virtualMachines/3" type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-14T19:38:39.786038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.30 Action Virtual Machines Tools Unmount

The Action Virtual Machines Tools Unmount call unmounts the virtual volume for VMware Tools on a specified virtual machine. If successful, the call returns the task that unmounted the tools.

Note: To unmount VMware Tools requires a <PoweredOn> value of `true`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier mod 4 = 0	VMware Tools media `Mounted`

Request

```
POST http://{Terremark URI}/virtualMachines/{virtual machine identifier}/tools/action/unmount
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/virtualMachines/9/tools/action/unmount
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
```

```
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Unmount Tools</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 19:49:25 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Unmount Tools</Operation>

  <Status>Complete</Status>

  <ImpactedItem href="/virtualMachines/1" type="application/vnd.tmrk.cloud.virtualMachine"/>

  <StartTime>2011-06-14T19:49:25.373038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.9.31 Action Virtual Machines Remove

The Action Virtual Machines Remove call removes a specified virtual machine from the compute pool. If successful, the call returns the task that removed the virtual machine.

Note: To remove a virtual machine requires a <Status> value of `Deployed` and a <PoweredOn> value of `false`.

Live Specification Test Values

Condition	Outcome
virtual machine identifier = 1 or not (mod 10 = 0 or mod 5 = 0 or mod 4 = 0 or mod 3 = 0)	Virtual machine status `Deployed`
virtual machine identifier mod 4 = 0 or mod 10 = 0	Powered off
virtual machine identifier mod 7 = 0	Has tasks running

Request

```
DELETE http://{Terremark URI}/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/virtualMachines/2
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
  Date: Tue, 14 Jun 2011 16:42:54 GMT
<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Delete Server</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/virtualMachines/2" type="application/vnd.tmrk.cloud.virtualMachine"/>
  <StartTime>2011-06-14T16:42:54.821038Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.9 Virtual Machine*.

Return to *7 Application Programming Interface Reference Guide*.

7.10 Operating System Family / Operating System

7.10.1 Get Operating System Families 514

7.10.2 Get Operating Systems by ID 516

Advance to *7.11 Physical Device*.

This section contains the calls for the Operating System Families and Operating System entities.

Return to *7 Application Programming Interface Reference Guide*.

7.10.1 Get Operating System Families

The Get Operating Systems Families call returns information regarding the operating systems available within operating system families defined in a compute pool.

Request

```
GET http://{Terremark URI}/operatingSystemFamilies/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/operatingSystemFamilies/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.operatingSystemFamily; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<OperatingSystemFamilies href="/operatingSystemFamilies/computePools/{compute pool identifier}"
  type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>

  </Links>

  <OperatingSystemFamily>

    <Name>{operating system family name}</Name>

    <OperatingSystems>

      <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
        pool identifier}" name="{operating system name}"
        type="application/vnd.tmrk.cloud.operatingSystem"/>

        ⋮

    </OperatingSystems>

  </OperatingSystemFamily>

    ⋮

</OperatingSystemFamilies>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 932
  Content-Type: application/vnd.tmrk.cloud.operatingSystemFamily; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 18:26:12 GMT

<OperatingSystemFamilies href="/operatingSystemFamilies/computePools/1"
  type="application/vnd.tmrk.cloud.operatingSystemFamily; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <OperatingSystemFamily>

    <Name>Windows</Name>

    <OperatingSystems>

      <OperatingSystem href="/operatingSystems/win32/computePools/1" name="Windows 2003"
        type="application/vnd.tmrk.cloud.operatingSystem"/>

      <OperatingSystem href="/operatingSystems/win64/computePools/1" name="Windows 2003 64 bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>

    </OperatingSystems>

  </OperatingSystemFamily>
```

```
    <OperatingSystemFamily>
      <Name>Linux</Name>
      <OperatingSystems>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
      </OperatingSystems>
    </OperatingSystemFamily>
  </OperatingSystemFamilies>
```

Return to *7.10 Operating System Family / Operating System*.

Return to *7 Application Programming Interface Reference Guide*.

7.10.2 Get Operating Systems by ID

The Get Operating Systems by ID call returns information regarding a specified operating system defined in a compute pool.

The <StepFactor> for <Processor> is inapplicable as the permitted values for processor are: 1, 2, 4, or 8.

Request

```
GET http://{Terremark URI}/operatingSystems/{operating system short name}/computePools/{compute pool
  identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/operatingSystems/win2003ent/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.operatingSystem
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
  identifier}" name="{operating system name}" type="application/vnd.tmrk.cloudApi.operatingSystem"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/computePools/{compute pool identifier}" type="application/vnd.tmrk.cloud.computePool"
      rel="up"/>
  </Links>
  <FamilyName>{operating system family name}</FamilyName>
  <ConfigurationOptions>
```

```
<Processor>
  <Minimum>{minimum processor count}</Minimum>
  <Maximum>{maximum processor count}</Maximum>
  <StepFactor>{increment value}</StepFactor>
</Processor>
<Memory>
  <MinimumSize>
    <Unit>{unit of minimum size value}</Unit>
    <Value>{minimum size}</Value>
  </MinimumSize>
  <MaximumSize>
    <Unit>{unit of maximum size value}</Unit>
    <Value>{maximum size}</Value>
  </MaximumSize>
  <StepFactor>
    <Unit>{unit of step factor value}</Unit>
    <Value>{step factor size}</Value>
  </StepFactor>
</Memory>
<Disk>
  <Minimum>{minimum count}</Minimum>
  <Maximum>{maximum count}</Maximum>
  <SystemDisk>
    <ResourceCapacityRange>
      <MinimumSize>
        <Unit>{unit of minimum size value}</Unit>
        <Value>{minimum size}</Value>
      </MinimumSize>
      <MaximumSize>
        <Unit>{unit of maximum size value}</Unit>
        <Value>{maximum size}</Value>
      </MaximumSize>
      <StepFactor>
        <Unit>{unit of step factor value}</Unit>
        <Value>{step factor size}</Value>
      </StepFactor>
    </ResourceCapacityRange>
```

```
        <MonthlyCost>{monthly cost}</MonthlyCost>
      </SystemDisk>
      <DataDisk>
        <ResourceCapacityRange>
          <MinimumSize>
            <Unit>{unit of minimum size value}</Unit>
            <Value>{minimum size}</Value>
          </MinimumSize>
          <MaximumSize>
            <Unit>{unit of maximum size value}</Unit>
            <Value>{maximum size}</Value>
          </MaximumSize>
          <StepFactor>
            <Unit>{unit of step factor value}</Unit>
            <Value>{step factor size}</Value>
          </StepFactor>
        </ResourceCapacityRange>
        <MonthlyCost>{monthly cost}</MonthlyCost>
      </DataDisk>
    </Disk>
    <NetworkAdapter>
      <Minimum>{minimum network adapter count}</Minimum>
      <Maximum>{maximum network adapter count}</Maximum>
      <StepFactor>{increment value}</StepFactor>
    </NetworkAdapter>
    <Customization>
      <Type>{Windows | Linux}</Type>
      <CanPowerOn>{true | false}</CanPowerOn>
      <PasswordRequired>{true | false}</PasswordRequired>
      <SshKeyRequired>{true | false}</SshKeyRequired>
    </Customization>
  </ConfigurationOptions>
</OperatingSystem>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1290
  Content-Type: application/vnd.tmrk.cloud.operatingSystem
  x-tmrk-currentuser: /admin/users/101
```

```
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 21 Jun 2011 15:38:43 GMT

<OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Full name of win2003ent"
  type="application/vnd.tmrk.cloud.operatingSystem" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <FamilyName>Windows</FamilyName>

  <ConfigurationOptions>

    <Processor>

      <Minimum>1</Minimum>

      <Maximum>8</Maximum>

      <StepFactor>2</StepFactor>

    </Processor>

    <Memory>

      <MinimumSize>

        <Unit>MB</Unit>

        <Value>256</Value>

      </MinimumSize>

      <MaximumSize>

        <Unit>MB</Unit>

        <Value>8192</Value>

      </MaximumSize>

      <StepFactor>

        <Unit>MB</Unit>

        <Value>4</Value>

      </StepFactor>

    </Memory>

    <Disk>

      <Minimum>1</Minimum>

      <Maximum>15</Maximum>

      <SystemDisk>

        <ResourceCapacityRange>

          <MinimumSize>

            <Unit>GB</Unit>

            <Value>1</Value>

          </MinimumSize>
```

```
          <MaximumSize>
            <Unit>GB</Unit>
            <Value>30</Value>
          </MaximumSize>
          <StepFactor>
            <Unit>GB</Unit>
            <Value>1</Value>
          </StepFactor>
        </ResourceCapacityRange>
        <MonthlyCost>0</MonthlyCost>
      </SystemDisk>
      <DataDisk>
        <ResourceCapacityRange>
          <MinimumSize>
            <Unit>GB</Unit>
            <Value>25</Value>
          </MinimumSize>
          <MaximumSize>
            <Unit>GB</Unit>
            <Value>500</Value>
          </MaximumSize>
          <StepFactor>
            <Unit>GB</Unit>
            <Value>5</Value>
          </StepFactor>
        </ResourceCapacityRange>
        <MonthlyCost>0</MonthlyCost>
      </DataDisk>
    </Disk>
    <NetworkAdapter>
      <Minimum>1</Minimum>
      <Maximum>4</Maximum>
      <StepFactor>1</StepFactor>
    </NetworkAdapter>
  </ConfigurationOptions>
</OperatingSystem>
```


Return to *7.10 Operating System Family / Operating System*.

Return to *7 Application Programming Interface Reference Guide*.

7.11 Physical Device

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Advance to *7.12 Layout*.

This section contains the calls for the Physical Device entity.

Return to *7 Application Programming Interface Reference Guide*.

7.11.1 Get Physical Devices

The Get Physical Devices call returns information regarding installed physical devices. Physical devices are hardware devices, as opposed to virtual devices, provided by the customer and installed in Terremark data centers.

Request

```
GET http://{Terremark URI}/physicalDevices/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/physicalDevices/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.physicalDevice; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PhysicalDevices href="/physicalDevices/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.physicalDevice; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <PhysicalDevice href="/physicalServers/{physical server identifier}" name="{physical server name}"
    type="application/vnd.tmrk.cloud.physicalServer">

    <Description>{textual description}</Description>

    <Tags>

      <Tag>{user-assigned tag}</Tag>

        ⋮

    </Tags>

    <Layout>

      <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>

      <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>

    </Layout>

    <NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>

    <Classification>{device classification}</Classification>

    <Model>{device model}</Model>

  </PhysicalDevice>

  <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router name}"
    type="application/vnd.tmrk.cloud.physicalRouter">

    <Description>{textual description}</Description>

    <Tags>

      <Tag>{user-assigned tag}</Tag>

        ⋮

    </Tags>

    <Layout>

      <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>

      <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>

    </Layout>
```

```
    <Classification>{device classification}</Classification>
    <Model>{device model}</Model>
  </PhysicalDevice>
  <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
    type="application/vnd.tmrk.cloud.haRouter">
    <Description>{textual description}</Description>
    <Tags>
      <Tag>{user-assigned tag}</Tag>
        ⋮
    </Tags>
    <Layout>
      <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
    </Layout>
    <Classification>{device classification}</Classification>
    <Model>{device model}</Model>
  </PhysicalDevice>
  <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
    type="application/vnd.tmrk.cloud.storageDevice">
    <Description>{textual description}</Description>
    <Tags>
      <Tag>{user-assigned tag}</Tag>
        ⋮
    </Tags>
    <Layout>
      <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
    </Layout>
    <NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Classification>{device classification}</Classification>
    <Model>{device model}</Model>
  </PhysicalDevice>
      ⋮
</PhysicalDevices>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2728
  Content-Type: application/vnd.tmrk.cloud.physicalDevice; type=collection
```

```
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 22 Feb 2012 21:37:05 GMT

<PhysicalDevices href="/physicaldevices/environments/1"
  type="application/vnd.tmrk.cloud.physicalDevice; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <PhysicalDevice href="/physicalservers/1" name="Server1"
    type="application/vnd.tmrk.cloud.physicalServer">

    <Description>Blah description</Description>

    <Tags>

      <Tag>Physical Device</Tag>

      <Tag>Server</Tag>

    </Tags>

    <Layout>

      <Row href="/layoutrows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>

      <Group href="/layoutgroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>

    </Layout>

    <NetworkHost href="/networkhosts/10" name="Server1"
      type="application/vnd.tmrk.cloud.networkHost"/>

    <Classification>Blah classification</Classification>

    <Model>Model here</Model>

  </PhysicalDevice>

  <PhysicalDevice href="/physicalrouters/2" name="Router2"
    type="application/vnd.tmrk.cloud.physicalRouter">

    <Description>Blah description</Description>

    <Tags>

      <Tag>Physical Device</Tag>

      <Tag>Router</Tag>

    </Tags>

    <Layout>

      <Row href="/layoutrows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>

      <Group href="/layoutgroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>

    </Layout>

    <Classification>Blah classification</Classification>

    <Model>Model here</Model>

  </PhysicalDevice>
```

```
    <PhysicalDevice href="/harouters/3" name="HARouter3" type="application/vnd.tmrk.cloud.haRouter">
      <Description>Blah description</Description>
      <Tags>
        <Tag>Physical Device</Tag>
        <Tag>HA Router</Tag>
      </Tags>
      <Layout>
        <Row href="/layoutrows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
        <Group href="/layoutgroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>
      </Layout>
      <Classification>Blah classification</Classification>
      <Model>Model here</Model>
    </PhysicalDevice>
    <PhysicalDevice href="/storagedevices/4" name="Storage4"
      type="application/vnd.tmrk.cloud.storageDevice">
      <Description>Description here</Description>
      <Tags>
        <Tag>Physical Device</Tag>
        <Tag>Storage</Tag>
      </Tags>
      <Layout>
        <Row href="/layoutrows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
        <Group href="/layoutgroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>
      </Layout>
      <NetworkHost href="/networkhosts/11" name="Storage4"
        type="application/vnd.tmrk.cloud.networkHost"/>
      <Classification>Network Storage Device</Classification>
      <Model>Model here</Model>
    </PhysicalDevice>
  </PhysicalDevices>
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.2 Get Physical Servers by ID

The Get Physical Servers by ID call returns information regarding a specified physical router defined in an environment.

Request

```
GET http://{Terremark URI}/physicalServers/{physical server identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/physicalServers/11
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.physicalServer
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PhysicalServer href="/physicalServers/{physical server identifier}" name="{physical server name}"
  type="application/vnd.tmrk.cloud.physicalServer" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/physicalServers/{physical server identifier}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/physicalServers/{physical server identifier}" name="edit"
      type="application/vnd.tmrk.cloud.physicalServer"/>

    <Action href="/physicalServers/{physical server identifier}/assignedIps" name="edit"
      type="application/vnd.tmrk.cloud.physicalServer"/>

    <Action href="/physicalServers/{physical server identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/physicalServers/{physical server identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>
```

```
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
    ⋮
  <TotalCount>{total number of tasks}</TotalCount>
</Tasks>
<Description>{textual description}</Description>
<Tags>
  <Tag>{user-defined tag}</Tag>
    ⋮
</Tags>
<Layout>
  <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>
  <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
</Layout>
<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
  type="application/vnd.tmrk.cloud.networkHost"/>
<Classification>{device classification}</Classification>
<Model>{device model}</Model>
<SerialNumber>{device serial number}</SerialNumber>
<LightsOutIp>{IP address to the lights out management module}</LightsOutIp>
<OperatingSystem>{device operating system}</OperatingSystem>
<AssignedIpAddresses>
  <Networks>
    <Network href="/networks/{network identifier}" type="application/vnd.tmrk.cloud.network">
      <IpAddresses>
        <IpAddress>{assigned IP address}</IpAddress>
          ⋮
      </IpAddresses>
    </Network>
      ⋮
  </Networks>
</AssignedIpAddresses>
<LicensedSoftware>
  <LicenseProvider>{service provider}</LicenseProvider>
  <HourlyLicensedSoftware>
    <Software>
```

```
        <Description>{textual description}</Description>
        <ProcessorCountPerUnit>{processor count of software license}</ProcessorCountPerUnit>
        <CostPerUnit>{cost per unit of software license}</CostPerUnit>
      </Software>
    </HourlyLicensedSoftware>
    <MonthlyLicensedSoftware>
      <PhysicalServerSoftwareEntry>
        <Description>{textual description}</Description>
        <ProcessorCountPerUnit>{processor count of software license}</ProcessorCountPerUnit>
        <CostPerUnit>{cost per unit of software license}</CostPerUnit>
      </PhysicalServerSoftwareEntry>
    </MonthlyLicensedSoftware>
      ⋮
  </LicensedSoftware>
</PhysicalServer>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2944
  Content-Type: application/vnd.tmrk.cloud.physicalServer
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 29 Sep 2011 16:00:10 GMT

<PhysicalServer href="/physicalServers/11" name="Server11"
  type="application/vnd.tmrk.cloud.physicalServer" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/tasks/physicalServers/11" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/physicalServers/11" name="edit" type="application/vnd.tmrk.cloud.physicalServer"/>

    <Action href="/physicalServers/11/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/physicalServers/11" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

      <Operation>Rename Device</Operation>

      <Status>Complete</Status>
```

```
    <ImpactedItem href="/physicalServers/11" name="sample device name"
      type="application/vnd.tmrk.cloud.physicalServer"/>
    <StartTime>2011-09-29T15:50:10.8534044Z</StartTime>
    <CompletedTime>2011-09-29T15:50:10.8534044Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <TotalCount>1</TotalCount>
</Tasks>
<Description>Blah description</Description>
<Tags>
  <Tag>Physical Device</Tag>
  <Tag>Server</Tag>
</Tags>
<Layout>
  <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
  <Group href="/layoutGroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>
</Layout>
<NetworkHost href="/networkHosts/111" name="Server11"
  type="application/vnd.tmrk.cloud.networkHost"/>
<Classification>Blah classification</Classification>
<Model>Model here</Model>
<SerialNumber>Blah serial #</SerialNumber>
<LightsOutIp>10.11.12.13</LightsOutIp>
<OperatingSystem>wIN2K3</OperatingSystem>
<AssignedIpAddresses href="/physicalServers/11/assignedIps"
  type="application/vnd.tmrk.cloud.physicalDeviceAssignedIps">
  <Actions>
    <Action href="/physicalServers/11/assignedIps" name="edit"
      type="application/vnd.tmrk.cloud.physicalDeviceAssignedIps"/>
  </Actions>
  <Networks>
    <Network href="/networks/1" type="application/vnd.tmrk.cloud.network">
      <IpAddresses>
        <IpAddress>1.2.3.4</IpAddress>
        <IpAddress>5.6.7.8</IpAddress>
      </IpAddresses>
    </Network>
```

```
      </Networks>
    </AssignedIpAddresses>
    <LicensedSoftware>
      <LicenseProvider>Service Provider</LicenseProvider>
      <MonthlyLicensedSoftware>
        <PhysicalServerSoftwareEntry>
          <Description>Win2k3</Description>
          <LicenseCount>4</LicenseCount>
          <CostPerUnit>1.25</CostPerUnit>
        </PhysicalServerSoftwareEntry>
      </MonthlyLicensedSoftware>
    </LicensedSoftware>
  </PhysicalServer>
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.3 Get Physical Routers by ID

The Get Physical Routers by ID call returns information regarding a specified physical router defined in an environment.

Request

```
GET http://{Terremark URI}/physicalRouters/{physical router identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/physicalRouters/12
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.physicalRouter
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PhysicalRouter href="/physicalRouters/{physical router identifier}" name="{physical router name}"
  type="application/vnd.tmrk.cloud.physicalRouter" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
```

```
  <Link href="/tasks/physicalRouters/{physical router identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection" rel="down"/>

</Links>

<Actions>

  <Action href="/physicalRouters/{physical router identifier}" name="edit"
    type="application/vnd.tmrk.cloud.physicalRouter"/>

  <Action href="/physicalRouters/{physical router identifier}/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

</Actions>

<Tasks href="/tasks/physicalRouters/{physical router identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Description>{textual description}</Description>

<Tags>

  <Tag>{user-defined tag}</Tag>

    ⋮

</Tags>

<Layout>

  <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>

  <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>

</Layout>

<Classification>{device classification}</Classification>

<Model>{device model}</Model>

<SerialNumber>{device serial number}</SerialNumber>
```

```
  <OutsideIp>{exterior IP address}</OutsideIp>

  <InsideIp>{interior IP address}</InsideIp>

</PhysicalRouter>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2005
  Content-Type: application/vnd.tmrk.cloud.physicalRouter
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 29 Sep 2011 16:13:42 GMT

<PhysicalRouter href="/physicalRouters/12" name="Router12"
  type="application/vnd.tmrk.cloud.physicalRouter" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/tasks/physicalRouters/12" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/physicalRouters/12" name="edit" type="application/vnd.tmrk.cloud.physicalRouter"/>

    <Action href="/physicalRouters/12/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/physicalRouters/12" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

      <Operation>Rename Device</Operation>

      <Status>Complete</Status>

      <ImpactedItem href="/physicalRouters/12" name="sample device name"
        type="application/vnd.tmrk.cloud.physicalRouter"/>

      <StartTime>2011-09-29T16:03:42.6865796Z</StartTime>

      <CompletedTime>2011-09-29T16:03:42.6865796Z</CompletedTime>

      <Notes>Some notes about the operation.</Notes>

      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <TotalCount>1</TotalCount>

  </Tasks>

  <Description>Blah description</Description>

  <Tags>

    <Tag>Physical Device</Tag>
```

```
    <Tag>Router</Tag>
  </Tags>
  <Layout>
    <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <Classification>Blah classification</Classification>
  <Model>Model here</Model>
  <SerialNumber>Blah serial #</SerialNumber>
  <OutsideIp>2.3.4.5</OutsideIp>
  <InsideIp>6.7.8.9</InsideIp>
</PhysicalRouter>
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.4 Get High Availability Routers by ID

The Get High Availability Routers by ID call returns information regarding a specified physical high availability router defined in an environment.

Request

```
GET http://{Terremark URI}/haRouters/{HA router identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/haRouters/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.haRouter
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<HighAvailabilityRouter href="/haRouters/{HA router identifier}" name="{HA router name}"
  type="application/vnd.tmrk.cloud.haRouter" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/haRouters/{HA router identifier}" type="application/vnd.tmrk.cloud.task;
      type=collection" rel="down"/>
```

```
</Links>
<Actions>
  <Action href="/haRouters/{HA router identifier}" name="edit"
    type="application/vnd.tmrk.cloud.haRouter"/>
  <Action href="/haRouters/{HA router identifier}/action/move" name="move"
    type="application/vnd.tmrk.cloud.moveLayoutRequest"/>
</Actions>
<Tasks href="/tasks/haRouters/{HA router identifier}" type="application/vnd.tmrk.cloud.task;
  type=collection"> <!-- only most recent task -->
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
    ⋮
  <TotalCount>{total number of tasks}</TotalCount>
</Tasks>
<Description>{textual description}</Description>
<Tags>
  <Tag>{user-assigned tag}</Tag>
    ⋮
</Tags>
<Layout>
  <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>
  <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
</Layout>
<Classification>{device classification}</Classification>
<Model>{device model}</Model>
<OutsideIp>{shared HA outside IP address}</OutsideIp>
<InsideIp>{shared HA inside IP address}</InsideIp>
<Devices>
```

```
    <Device>
      <Model>{first device model}</Model>
      <SerialNumber>{first serial number}</SerialNumber>
      <OutsideIp>{first assigned HA outside IP address}</OutsideIp>
      <InsideIp>{first assigned HA inside IP address}</InsideIp>
    </Device>
    <Device>
      <Model>{second device model}</Model>
      <SerialNumber>{second serial number}</SerialNumber>
      <OutsideIp>{second assigned HA outside IP address}</OutsideIp>
      <InsideIp>{second assigned HA inside IP address}</InsideIp>
    </Device>
  </Devices>
</HighAvailabilityRouter>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2247
  Content-Type: application/vnd.tmrk.cloud.haRouter
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 29 Sep 2011 16:15:29 GMT

<HighAvailabilityRouter href="/haRouters/4" name="HARouter4"
  type="application/vnd.tmrk.cloud.haRouter" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/tasks/haRouters/4" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/haRouters/4" name="edit" type="application/vnd.tmrk.cloud.haRouter"/>

    <Action href="/haRouters/4/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/haRouters/4" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

      <Operation>Rename Device</Operation>

      <Status>Complete</Status>

      <ImpactedItem href="/haRouters/4" name="sample device name"
        type="application/vnd.tmrk.cloud.haRouter"/>
```

```
      <StartTime>2011-09-29T16:05:29.2562355Z</StartTime>
      <CompletedTime>2011-09-29T16:05:29.2562355Z</CompletedTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>1</TotalCount>
  </Tasks>
  <Description>Blah description</Description>
  <Tags>
    <Tag>Physical Device</Tag>
    <Tag>HA Router</Tag>
  </Tags>
  <Layout>
    <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <Classification>Blah classification</Classification>
  <Model>Model here</Model>
  <OutsideIp>1.2.3.4</OutsideIp>
  <InsideIp>5.6.7.8</InsideIp>
  <Devices>
    <Device>
      <Model>Physical Server 1</Model>
      <SerialNumber>Physical Serial 1 #</SerialNumber>
      <OutsideIp>200.0.0.0</OutsideIp>
      <InsideIp>100.0.0.0</InsideIp>
    </Device>
    <Device>
      <Model>Physical Server 2</Model>
      <SerialNumber>Physical Serial 2 #</SerialNumber>
      <OutsideIp>200.1.0.0</OutsideIp>
      <InsideIp>100.1.0.0</InsideIp>
    </Device>
  </Devices>
</HighAvailabilityRouter>
```


Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.5 Get Storage Devices by ID

The Get Storage Devices by ID call returns information regarding a specified physical storage device defined in an environment.

Request

```
GET http://{Terremark URI}/storageDevices/{storage device identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/storageDevices/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.storageDevice
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<StorageDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
  type="application/vnd.tmrk.cloud.storageDevice" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/storageDevices/{storage device identifier}"
      type="application/vnd.tmrk.cloud.tasks" rel="down"

  </Links>

  <Actions>

    <Action href="/storageDevices/{storage device identifier}" name="edit"
      type="application/vnd.tmrk.cloud.storageDevice"/>

    <Action href="/storageDevices/{storage device identifier}/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/storageDevices/{storage device identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
```

```
      <Notes>{notes on action}</Notes>
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
      ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Description>{textual description}</Description>
  <Tags>
    <Tag>{user-assigned tag}</Tag>
      ⋮
  </Tags>
  <Layout>
    <Row href="/layoutRows/{row identifier}" type="application/vnd.tmrk.cloud.layoutRow"/>
    <Group href="/layoutGroups/{group identifier}" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </Layout>
  <NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
    type="application/vnd.tmrk.cloud.networkHost"/>
  <Classification>{device classification}</Classification>
  <Model>{device model}</Model>
  <SerialNumber>{device serial number}</SerialNumber>
  <AssignedIpAddresses>
    <Networks>
      <Network href="/networks/{network identifier}" type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>{assigned IP address}</IpAddress>
            ⋮
        </IpAddresses>
      </Network>
        ⋮
    </Networks>
  </AssignedIpAddresses>
</StorageDevice>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2309
  Content-Type: application/vnd.tmrk.cloud.storageDevice
```

```
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 29 Sep 2011 16:17:27 GMT

<StorageDevice href="/storageDevices/4" name="Storage4"
  type="application/vnd.tmrk.cloud.storageDevice" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/tasks/storageDevices/4" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/storageDevices/4" name="edit" type="application/vnd.tmrk.cloud.storageDevice"/>

    <Action href="/storageDevices/4/action/move" name="move"
      type="application/vnd.tmrk.cloud.moveLayoutRequest"/>

  </Actions>

  <Tasks href="/tasks/storageDevices/4" type="application/vnd.tmrk.cloud.task; type=collection">

    <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

      <Operation>Rename Device</Operation>

      <Status>Complete</Status>

      <ImpactedItem href="/storageDevices/4" name="sample device name"
        type="application/vnd.tmrk.cloud.storageDevice"/>

      <StartTime>2011-09-29T16:07:27.7310818Z</StartTime>

      <CompletedTime>2011-09-29T16:07:27.7310818Z</CompletedTime>

      <Notes>Some notes about the operation.</Notes>

      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

    <TotalCount>1</TotalCount>

  </Tasks>

  <Description>Description here</Description>

  <Tags>

    <Tag>Physical Device</Tag>

    <Tag>Storage</Tag>

  </Tags>

  <Layout>

    <Row href="/layoutRows/1" name="Web Tier" type="application/vnd.tmrk.cloud.layoutRow"/>

    <Group href="/layoutGroups/1" name="Web Servers" type="application/vnd.tmrk.cloud.layoutGroup"/>

  </Layout>

  <NetworkHost href="/networkHosts/104" name="Storage4"
```

```
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Classification>Network Storage Device</Classification>
    <Model>Model here</Model>
    <SerialNumber>Blah serial #</SerialNumber>
    <AssignedIpAddresses>
      <Networks>
        <Network href="/networks/5" name="1.2.3.5/28" type="application/vnd.tmrk.cloud.network">
          <IpAddresses>
            <IpAddress>1.2.3.4</IpAddress>
            <IpAddress>5.6.7.8</IpAddress>
          </IpAddresses>
        </Network>
      </Networks>
    </AssignedIpAddresses>
  </StorageDevice>
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.6 Action Physical Servers Edit

The Action Physical Servers Edit call edits the name, description, or tags on a physical server defined in an environment. If successful and the name is changed, even if the description or tags are also changed, a 202 Accepted header is returned with the task that changed the physical server name. If successful and only the description or tags are changed (the name is not changed), a 204 No Content header is returned.

The `name` attribute on <PhysicalServer … > is required and may be changed.

Note: The name may not be changed to that of another physical server; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: To remove the description an empty element, <Description/>, must be in the body.

Both <Tags> and <Tag> are optional. Including a <Tag> not currently on the physical device adds that tag to the physical device.

Note: If the physical server has tags and <Tags> is empty, all tags are removed. Similarly, if any <Tag> subordinate elements are valued on the physical server and not present in the call, that tag is removed from the physical server. If the physical server has tags and <Tags> is not present in the call, no change is made to the tags.

<AssignedIpAddresses> is optional and ignored if present. See **Action Physical Servers Edit Assigned IP Address** to modify assigned IP addresses.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/physicalServers/{physical server identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/physicalServers/4
```

Body

```
<PhysicalServer name="{physical server name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user-assigned tag}</Tag> <!-- Optional, if absent removes that tag -->
      ⋮
  </Tags>
  <AssignedIpAddresses> <!-- Optional, ignored if present -->
    <Networks>
      <Network href="/networks/{network identifier}" type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>{assigned IP address}</IpAddress>
            ⋮
        </IpAddresses>
      </Network>
        ⋮
    </Networks>
  </AssignedIpAddresses>
</PhysicalServer>
```

EXAMPLE

```
<PhysicalServer name="Physical Server 1">
  <Description>Blah description</Description>
  <Tags>
    <Tag>Physical Device</Tag>
    <Tag>Server</Tag>
  </Tags>
  <AssignedIpAddresses>
    <Networks>
      <Network href="/networks/1" type="application/vnd.tmrk.cloud.network">
        <IpAddresses>
          <IpAddress>1.2.3.4</IpAddress>
          <IpAddress>5.6.7.8</IpAddress>
        </IpAddresses>
      </Network>
    </Networks>
  </AssignedIpAddresses>
</PhysicalServer>
```

Response

1. If the name is changed:

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Rename Device</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 494
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 20:30:06 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Rename Device</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/physicalServers/4" type="application/vnd.tmrk.cloud.physicalServer"/>

  <StartTime>2011-06-10T20:30:06.1503418Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

2. If the name is not changed:

```
HTTP/1.1 204 No Content
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 07 Nov 2011 20:33:41 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.7 Action Physical Servers Edit Assigned IP Address

The Action Physical Servers Edit Assigned IP Address call edits the IP addresses assigned to a physical server defined in an environment. If successful, the call returns the task that modified the physical server.

The `href` attribute is required on the element <Network … > to identify to which network the assigned IP address belongs.

Note: The network to which a physical server is attached may not be changed.

Both <Network> and <IpAddress> are optional. Including an <IpAddress> not currently on the virtual machine adds that IP address to the physical server.

Note: If an <IpAddress> is valued on the physical server and not present in the call, that IP address is removed from the network.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/physicalServers/{physical server identifier}/assignedIps
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/physicalServers/1/assignedIps
```

Body

```
<AssignedIpAddresses>
  <Networks> <!-- Required -->
    <Network href="/networks/{network identifier}"
      type="application/vnd.tmrk.cloud.network"> <!-- Optional, if absent removes that network -->
      <IpAddresses>
        <IpAddress>{IP address}</IpAddress> <!-- Optional, if absent removes that IP address -->
          ⋮
      </IpAddresses>
    </Network>
      ⋮
  </Networks>
</AssignedIpAddresses>
```

EXAMPLE

```
<AssignedIpAddresses>
  <Networks>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <IpAddresses>
        <IpAddress>10.0.4.34</IpAddress>
        <IpAddress>10.0.4.37</IpAddress>
```

```
      </IpAddresses>
    </Network>
  </Networks>
</AssignedIpAddresses>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 530
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 01 Sep 2011 16:40:55 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Server</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/physicalServers/1" name="Physical Server 1"
    type="application/vnd.tmrk.cloud.physicalServer"/>

  <StartTime>2011-09-01T16:40:55.794904Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.8 Action Physical Servers Move

The Action Physical Servers Move call moves the physical server to a different layout group. If successful, the call returns a 204 No Content header.

Three options are possible:

1. The physical server may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
2. The physical server may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
3. The physical server may be moved to a new layout group created in a new row created in the layout of the environment.

<LayoutRequest> has three variations. Only one of the three variations is permitted in a call:

1. Move to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the physical server physical device will be moved.

2. Move to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the physical server physical device will be moved.

3. Move to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the physical server physical device will be moved.

Request

```
POST http://{Terremark URI}/physicalServers/{physical server identifier}/action/move
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/physicalServers/4/action/move
```

Body

1. Add to an existing group.

```
<LayoutRequest>
  <Group href="/layoutGroups/{group identifier}"
    type="application/vnd.tmrk.cloud.layoutGroup"/> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Group href="/layoutGroups/1" type="application/vnd.tmrk.cloud.layoutGroup"/>
</LayoutRequest>
```

2. Add to a newly created group in an existing row.

```
<LayoutRequest>
  <Row href="/layoutRows/{row identifier}"
    type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Row href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow"/>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

3. Add to a newly created group in a newly created row.

```
<LayoutRequest>
  <NewRow>{row name}</NewRow> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <NewRow>MyNewRowName</NewRow>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 20:33:07 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.9 Action Physical Routers Edit

The Action Physical Routers Edit call edits the name, description, or tags on a physical router defined in an environment. If successful and the name is changed, even if the description or tags are also changed, a 202 Accepted header is returned with the task that changed the physical router name. If successful and only the description or tags are changed (the name is not changed), a 204 No Content header is returned.

The `name` attribute on <PhysicalRouter … > is required and may be changed.

Note: The name may not be changed to that of another physical router; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: To remove the description an empty element, <Description/>, must be in the body.

Both <Tags> and <Tag> are optional. Including a <Tag> not currently on the physical device adds that tag to the physical device.

Note: If the physical router has tags and <Tags> is empty, all tags are removed. Similarly, if any <Tag> subordinate elements are valued on the physical router and not present in the call, that tag is removed from the physical router. If the physical router has tags and <Tags> is not present in the call, no change is made to the tags.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/physicalRouters/{physical router identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/physicalRouters/4
```

Body

```
<PhysicalRouter name="{physical router name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user-assigned tag}</Tag> <!-- Optional, if absent removes that tag -->
      ⋮
  </Tags>
</PhysicalRouter>
```

EXAMPLE

```
<PhysicalRouter name="PhysicalRouter1">
  <Description>Physical Router description</Description>
  <Tags>
    <Tag>Physical Device</Tag>
    <Tag>Physical Router</Tag>
  </Tags>
</PhysicalRouter>
```

Response

1. If the name is changed:

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Rename Device</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
```

```
  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 494
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 19:50:37 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Rename Device</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/physicalRouters/4" type="application/vnd.tmrk.cloud.physicalRouter"/>

  <StartTime>2011-06-10T19:50:37.4413418Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

2. If the name is not changed:

```
HTTP/1.1 204 No Content
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 07 Nov 2011 20:33:41 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.10 Action Physical Routers Move

The Action Physical Routers Move call moves the physical router to a different layout group. If successful, the call returns a 204 No Content header.

Three options are possible:

1. The physical router may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
2. The physical router may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
3. The physical router may be moved to a new layout group created in a new row created in the layout of the environment.

<LayoutRequest> has three variations. Only one of the three variations is permitted in a call:

1. Move to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the physical router physical device will be moved.

2. Move to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the physical router physical device will be moved.

3. Move to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the physical router physical device will be moved.

Request

```
POST http://{Terremark URI}/physicalRouters/{physical router identifier}/action/move
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/physicalRouters/4/action/move
```

Body

1. Add to an existing group.

```
<LayoutRequest>
  <Group href="/layoutGroups/{group identifier}"
```

```
    type="application/vnd.tmrk.cloud.layoutGroup"/> <!-- Required -->
  </LayoutRequest>
```

EXAMPLE

```
  <LayoutRequest>
    <Group href="/layoutGroups/1" type="application/vnd.tmrk.cloud.layoutGroup"/>
  </LayoutRequest>
```

2. Add to a newly created group in an existing row.

```
  <LayoutRequest>
    <Row href="/layoutRows/{row identifier}"
     type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </LayoutRequest>
```

EXAMPLE

```
  <LayoutRequest>
    <Row href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow"/>
    <NewGroup>MyNewGroupName</NewGroup>
  </LayoutRequest>
```

3. Add to a newly created group in a newly created row.

```
  <LayoutRequest>
    <NewRow>{row name}</NewRow> <!-- Required -->
    <NewGroup>{group name}</NewGroup> <!-- Required -->
  </LayoutRequest>
```

EXAMPLE

```
  <LayoutRequest>
    <NewRow>MyNewRowName</NewRow>
    <NewGroup>MyNewGroupName</NewGroup>
  </LayoutRequest>
```

Response

```
  HTTP/1.1 204 No Content
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 19:54:41 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.11 Action High Availability Routers Edit

The Action High Availability Routers Edit call edits the name, description, or tags on a high availability router defined in an environment. If successful and the name is changed, even if the description or tags are also changed, a 202 Accepted header is returned with the task that changed the high availability router name. If successful and only the description or tags are changed (the name is not changed), a 204 No Content header is returned.

The `name` attribute on <HighAvailabilityRouter … > is required and may be changed.

Note: The name may not be changed to that of another high availability router; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: To remove the description an empty element, <Description/>, must be in the body.

Both <Tags> and <Tag> are optional. Including a <Tag> not currently on the physical device adds that tag to the physical device.

Note: If the high availability router has tags and <Tags> is empty, all tags are removed. Similarly, if any <Tag> subordinate elements are valued on the high availability router and not present in the call, that tag is removed from the high availability router. If the high availability router has tags and <Tags> is not present in the call, no change is made to the tags.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/haRouters/{HA router identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/haRouters/4
```

Body

```
<HighAvailabilityRouter name="{HA router name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user-assigned tag}</Tag> <!-- Optional, if absent removes that tag -->
      ⋮
  </Tags>
</HighAvailabilityRouter>
```

EXAMPLE

```
<HighAvailabilityRouter name="HA Router 1">
  <Description>HA Router description</Description>
  <Tags>
    <Tag>Physical Device</Tag>
    <Tag>HA Router</Tag>
  </Tags>
</HighAvailabilityRouter>
```

Response

1. If the name is changed:

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Rename Device</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
```

```
  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 481
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 15:11:45 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Rename Device</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/haRouters/4" type="application/vnd.tmrk.cloud.haRouter"/>

  <StartTime>2011-06-10T15:11:44.9493418Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

2. If the name is not changed:

```
HTTP/1.1 204 No Content
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 07 Nov 2011 20:33:41 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.12 Action High Availability Routers Move

The Action High Availability Routers Move call moves the high availability router to a different layout group. If successful, the call returns a 204 No Content header.

Three options are possible:

1. The high availability router may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
2. The high availability router may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
3. The high availability router may be moved to a new layout group created in a new row created in the layout of the environment.

<LayoutRequest> has three variations. Only one of the three variations is permitted in a call:

1. Move to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the high availability router physical device will be moved.

2. Move to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the high availability router physical device will be moved.

3. Move to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the high availability router physical device will be moved.

Request

```
POST http://{Terremark URI}/haRouters/{HA router identifier}/action/move
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/haRouters/4/action/move
```

Body

1. Add to an existing group.

```
<LayoutRequest>

  <Group href="/layoutGroups/{group identifier}"
    type="application/vnd.tmrk.cloud.layoutGroup"/> <!-- Required -->

</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Group href="/layoutGroups/1" type="application/vnd.tmrk.cloud.layoutGroup"/>
</LayoutRequest>
```

2. Add to a newly created group in an existing row.

```
<LayoutRequest>
  <Row href="/layoutRows/{row identifier}"
   type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Row href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow"/>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

3. Add to a newly created group in a newly created row.

```
<LayoutRequest>
  <NewRow>{row name}</NewRow> <!-- Required -->
  <NewGroup>{group name}</NewGroup> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <NewRow>MyNewRowName</NewRow>
  <NewGroup>MyNewGroupName</NewGroup>
</LayoutRequest>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
Date: Fri, 10 Jun 2011 17:46:27 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.13 Action Storage Devices Edit

The Action Storage Devices Edit call edits the name, description, or tags on a storage device defined in an environment. If successful and the name is changed, even if the description or tags are also changed, a 202 Accepted header is returned with the task that changed the storage device name. If successful and only the description or tags are changed (the name is not changed), a 204 No Content header is returned.

The `name` attribute on <StorageDevice … > is required and may be changed.

Note: The name may not be changed to that of another storage device; must begin with a letter; may contain only letters, numbers, or hyphens; and must not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: To remove the description an empty element, <Description/>, must be in the body.

Both <Tags> and <Tag> are optional. Including a <Tag> not currently on the physical device adds that tag to the physical device.

Note: If the storage device has tags and <Tags> is empty, all tags are removed. Similarly, if any <Tag> subordinate elements are valued on the storage device and not present in the call, that tag is removed from the storage device. If the storage device has tags and <Tags> is not present in the call, no change is made to the tags.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
PUT http://{Terremark URI}/storageDevices/{storage device identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/storageDevices/4
```

Body

```
<StorageDevice name="{storage device name}"> <!-- name required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Tags> <!-- Optional -->
    <Tag>{user-assigned tag}</Tag> <!-- Optional, if absent removes that tag -->
      ⋮
  </Tags>
</StorageDevice>
```

EXAMPLE

```
<StorageDevice name="Storage Device 1">
  <Description>Blah description</Description>
  <Tags>
    <Tag>Physical Device</Tag>
    <Tag>Server</Tag>
  </Tags>
</StorageDevice>
```

Response

1. If the name is changed:

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Rename Device</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
  <ErrorMessage>{error message}</ErrorMessage>
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 491
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 20:43:58 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Rename Device</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/storageDevices/4" type="application/vnd.tmrk.cloud.storageDevice"/>

  <StartTime>2011-06-10T20:43:58.4063418Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

2. If the name is not changed:

```
HTTP/1.1 204 No Content
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 07 Nov 2011 20:33:41 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.11.14 Action Storage Devices Move

The Action Storage Devices Move call moves the storage device to a different layout group. If successful, the call returns a 204 No Content header.

Three options are possible:

1. The storage device may be moved to a group currently defined in the layout of the environment. The group may be in a different row.
2. The storage device may be moved to a new layout group created in the specified layout row defined in the layout of the environment.
3. The storage device may be moved to a new layout group created in a new row created in the layout of the environment.

<LayoutRequest> has three variations. Only one of the three variations is permitted in a call:

1. Move to an existing group.

   <Group> is required and the `href` attribute on the element is required to identify the group to which the storage device physical device will be moved.

2. Move to a newly created group in an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the storage device physical device will be moved.

3. Move to a newly created group in a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

   <NewGroup> is required to provide the required name, which may not exceed fifty characters, and to create the group to which the storage device physical device will be moved.

Request

```
POST http://{Terremark URI}/storageDevices/{storage device identifier}/action/move
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/storageDevices/4/action/move
```

Body

1. Add to an existing group.

```
<LayoutRequest>
  <Group href="/layoutGroups/{group identifier}"
   type="application/vnd.tmrk.cloud.layoutGroup"/> <!-- Required -->
</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>
  <Group href="/layoutGroups/1" type="application/vnd.tmrk.cloud.layoutGroup"/>
</LayoutRequest>
```

2. Add to a newly created group in an existing row.

```
<LayoutRequest>
```

```
  <Row href="/layoutRows/{row identifier}"
   type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->

  <NewGroup>{group name}</NewGroup> <!-- Required -->

</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>

  <Row href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow"/>

  <NewGroup>MyNewGroupName</NewGroup>

</LayoutRequest>
```

3. Add to a newly created group in a newly created row.

```
<LayoutRequest>

  <NewRow>{row name}</NewRow> <!-- Required -->

  <NewGroup>{group name}</NewGroup> <!-- Required -->

</LayoutRequest>
```

EXAMPLE

```
<LayoutRequest>

  <NewRow>MyNewRowName</NewRow>

  <NewGroup>MyNewGroupName</NewGroup>

</LayoutRequest>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 10 Jun 2011 20:45:59 GMT
```

Return to *7.11 Physical Device*.

Return to *7 Application Programming Interface Reference Guide*.

7.12 Layout

7.12.1 Get Layouts 563

7.12.2 Get Layouts by Compute Pool 573

Advance to *7.13 Row*.

This section contains the calls for the Layout entity.

Return to *7 Application Programming Interface Reference Guide*.

7.12.1 Get Layouts

The Get Layouts call returns information regarding the row and group of network hosts in an environment. Rows and groups allow aggregation of servers along logical boundaries defined by the organization.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

Request

```
GET http://{Terremark URI}/layout/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/layout/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.deviceLayout
  x-tmrk-currentuser: /admin/users/{user identifier}
```

```
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DeviceLayout href="/layout/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.deviceLayout" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutRows/environments/{environment identifier}/action/createLayoutRow"
      name="createLayoutRow" type="application/vnd.tmrk.cloud.createLayoutRow"/>

    <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
      name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>

  </Actions>

  <Rows>

    <Row href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow">

      <Links>

        <Link href="/layout/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

      </Links>

      <Actions>

        <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
          name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>

        <Action href="/layoutRows/{row identifier}" name="edit"
          type="application/vnd.tmrk.cloud.layoutRow"/>

        <Action href="/layoutRows/{row identifier}/action/moveUp" name="moveUp"/>

        <Action href="/layoutRows/{row identifier}/action/moveDown" name="moveDown"/>

        <Action href="/layoutRows/{row identifier}" name="remove" actionDisabled="{noAccess |
          disabled}"/>

      </Actions>

      <Index>{row index}</Index>

      <Groups>

        <Group href="/layoutGroups/{group identifier}" name="{group name}"
          type="application/vnd.tmrk.cloud.layoutGroup">

          <Links>

            <Link href="/layoutRows/{row identifier}" name="{row name}"
              type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>

            <Link href="/layout/environments/{row identifier}" name="{environment name}"
              type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

          </Links>

          <Actions>
```

```
    <Action href="/layoutGroups/{group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>

    <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>

    <Action href="/layoutGroups/{group Identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

  </Actions>

  <Index>{group index}</Index>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
      name}" type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

      <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

      <Memory>

        <Unit>{unit of memory value}</Unit>

        <Value>{memory size}</Value>

      </Memory>

      <Storage>

        <Unit>{unit of storage value}</Unit>

        <Value>{storage size}</Value>

      </Storage>

      <OperatingSystem href="/operatingSystems/{operating system short
        name}/computePools/{compute pool identifier}" name="{operating system name}"
        type="application/vnd.tmrk.cloud.operatingSystem"/>

      <PoweredOn>{true | false}</PoweredOn>

      <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>

    </VirtualMachine>

      ⋮

  </VirtualMachines>

  <PhysicalDevices>

    <PhysicalDevice href="/physicalServers/{physical device identifier}" name="{physical device
      name}" type="application/vnd.tmrk.cloud.physicalServer"/>

    <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router
      name}" type="application/vnd.tmrk.cloud.physicalRouter"/>

    <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
      type="application/vnd.tmrk.cloud.haRouter">

    <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device
      name}" type="application/vnd.tmrk.cloud.storageDevice"/>

      ⋮

  </PhysicalDevices>
```

```
        </Group>
          ⋮
      </Groups>
    </Row>
      ⋮
  </Rows>
</DeviceLayout>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 10613
  Content-Type: application/vnd.tmrk.cloud.deviceLayout
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 12 Sep 2011 21:07:10 GMT

<DeviceLayout href="/layout/environments/1" type="application/vnd.tmrk.cloud.deviceLayout"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutRows/environments/1/action/createLayoutRow" name="createLayoutRow"
      type="application/vnd.tmrk.cloud.createLayoutRow"/>

    <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
      type="application/vnd.tmrk.cloud.createLayoutGroup"/>

  </Actions>

  <Rows>

    <Row href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow">

      <Links>

        <Link href="/layout/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

      </Links>

      <Actions>

        <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
          type="application/vnd.tmrk.cloud.createLayoutGroup"/>

        <Action href="/layoutRows/1" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>

        <Action href="/layoutRows/1/action/moveUp" name="moveUp" actionDisabled="disabled"/>

        <Action href="/layoutRows/1/action/moveDown" name="moveDown"/>

        <Action href="/layoutRows/1" name="remove" actionDisabled="disabled"/>

      </Actions>
```

```
    <Index>0</Index>
    <Groups>
      <Group href="/layoutGroups/2" name="Layout Group 2"
        type="application/vnd.tmrk.cloud.layoutGroup">
        <Links>
          <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
            rel="up"/>
          <Link href="/layout/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
        </Links>
        <Actions>
          <Action href="/layoutGroups/2" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
          <Action href="/layoutGroups/2/action/orderHigher" name="orderHigher"/>
          <Action href="/layoutGroups/2/action/orderLower" name="orderLower"/>
          <Action href="/layoutGroups/2" name="remove" actionDisabled="disabled"/>
        </Actions>
        <Index>1</Index>
        <VirtualMachines>
          <VirtualMachine href="/virtualMachines/4" name="VM4"
            type="application/vnd.tmrk.cloud.virtualMachine">
            <Status>NotDeployed</Status>
            <ProcessorCount>2</ProcessorCount>
            <Memory>
              <Unit>MB</Unit>
              <Value>1024</Value>
            </Memory>
            <Storage>
              <Unit>GB</Unit>
              <Value>120</Value>
            </Storage>
            <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
              Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
          </VirtualMachine>
          <VirtualMachine href="/virtualMachines/5" name="VM5"
            type="application/vnd.tmrk.cloud.virtualMachine">
            <Status>Deployed</Status>
            <ProcessorCount>4</ProcessorCount>
            <Memory>
              <Unit>MB</Unit>
```

```
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</Group>
<Group href="/layoutGroups/3" name="Layout Group 3"
  type="application/vnd.tmrk.cloud.layoutGroup">
  <Links>
    <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
      rel="up"/>
    <Link href="/layout/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
  </Links>
  <Actions>
```

```
        <Action href="/layoutGroups/3" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>

        <Action href="/layoutGroups/3/action/orderHigher" name="orderHigher"/>

        <Action href="/layoutGroups/3/action/orderLower" name="orderLower"
          actionDisabled="disabled"/>

        <Action href="/layoutGroups/3" name="remove" actionDisabled="disabled"/>

      </Actions>

      <Index>2</Index>

      <PhysicalDevices>

        <PhysicalDevice href="/physicalServers/1" name="Server 1"
          type="application/vnd.tmrk.cloud.physicalServer"/>

        <PhysicalDevice href="/physicalRouters/1" name="Router 1"
          type="application/vnd.tmrk.cloud.physicalRouter"/>

      </PhysicalDevices>

    </Group>

  </Groups>

</Row>

<Row href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow">

  <Links>

    <Link href="/layout/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
      type="application/vnd.tmrk.cloud.createLayoutGroup"/>

    <Action href="/layoutRows/2" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>

    <Action href="/layoutRows/2/action/moveUp" name="moveUp"/>

    <Action href="/layoutRows/2/action/moveDown" name="moveDown" actionDisabled="disabled"/>

    <Action href="/layoutRows/2" name="remove" actionDisabled="disabled"/>

  </Actions>

  <Index>1</Index>

  <Groups>

    <Group href="/layoutGroups/4" name="Layout Group 4"
      type="application/vnd.tmrk.cloud.layoutGroup">

      <Links>

        <Link href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow"
          rel="up"/>

        <Link href="/layout/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

      </Links>

      <Actions>
```

```
    <Action href="/layoutGroups/4" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
    <Action href="/layoutGroups/4/action/orderHigher" name="orderHigher"/>
    <Action href="/layoutGroups/4/action/orderLower" name="orderLower"/>
    <Action href="/layoutGroups/4" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Index>3</Index>
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/4" name="VM4"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>120</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>Deployed</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
```

```
      </VirtualMachine>
      <VirtualMachine href="/virtualMachines/6" name="VM6"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Status>CopyInProgress</Status>
        <ProcessorCount>4</ProcessorCount>
        <Memory>
          <Unit>MB</Unit>
          <Value>2048</Value>
        </Memory>
        <Storage>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>false</PoweredOn>
        <ToolsStatus>NotRunning</ToolsStatus>
      </VirtualMachine>
    </VirtualMachines>
  </Group>
  <Group href="/layoutGroups/5" name="Layout Group 5"
    type="application/vnd.tmrk.cloud.layoutGroup">
    <Links>
      <Link href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow"
        rel="up"/>
      <Link href="/layout/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
    </Links>
    <Actions>
      <Action href="/layoutGroups/5" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
      <Action href="/layoutGroups/5/action/orderHigher" name="orderHigher"/>
      <Action href="/layoutGroups/5/action/orderLower" name="orderLower"
        actionDisabled="disabled"/>
      <Action href="/layoutGroups/5" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Index>4</Index>
    <VirtualMachines>
      <VirtualMachine href="/virtualMachines/4" name="VM4"
        type="application/vnd.tmrk.cloud.virtualMachine">
```

```
    <Status>NotDeployed</Status>
    <ProcessorCount>2</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>1024</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/5" name="VM5"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/6" name="VM6"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
```

```
            <Storage>
              <Unit>GB</Unit>
              <Value>10</Value>
            </Storage>
            <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
              type="application/vnd.tmrk.cloud.operatingSystem"/>
            <PoweredOn>false</PoweredOn>
            <ToolsStatus>NotRunning</ToolsStatus>
          </VirtualMachine>
        </VirtualMachines>
        <PhysicalDevices>
          <PhysicalDevice href="/physicalServers/1" name="Server 1"
            type="application/vnd.tmrk.cloud.physicalServer"/>
          <PhysicalDevice href="/physicalRouters/1" name="Router 1"
            type="application/vnd.tmrk.cloud.physicalRouter"/>
        </PhysicalDevices>
      </Group>
    </Groups>
  </Row>
 </Rows>
</DeviceLayout>
```

Return to *7.12 Layout*.

Return to *7 Application Programming Interface Reference Guide*.

7.12.2 Get Layouts by Compute Pool

The Get Layouts by Compute Pool call returns information regarding the row and group of network hosts for a specified compute pool in an environment. Rows and groups allow aggregation of servers along logical boundaries defined by the organization.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> refers to the status of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

Request

```
GET http://{Terremark URI}/layout/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/layout/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.deviceLayout
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DeviceLayout href="/layout/computePools/{compute pool identifier}"
  type="application/vnd.tmrk.cloud.deviceLayout" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/computePools/{compute pool identifier}" name="{compute pool name}"
      type="application/vnd.tmrk.cloud.computePool" rel="alternate"/>

  </Links>

  <Actions>

    <Action href="/layoutRows/environments/{environment identifier}/action/createLayoutRow"
      name="createLayoutRow" type="application/vnd.tmrk.cloud.createLayoutRow"/>

    <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
      name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>

  </Actions>

  <Rows>

    <Row href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow">

      <Links>

        <Link href="/layout/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
```

```
    </Links>
    <Actions>
      <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
       name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>
      <Action href="/layoutRows/{row identifier}" name="edit"
       type="application/vnd.tmrk.cloud.layoutRow"/>
      <Action href="/layoutRows/{row identifier}/action/moveUp" name="moveUp"/>
      <Action href="/layoutRows/{row identifier}/action/moveDown" name="moveDown"/>
      <Action href="/layoutRows/{row identifier}" name="remove" actionDisabled="{noAccess |
       disabled}"/>
    </Actions>
    <Index>{row index}</Index>
    <Groups>
      <Group href="/layoutGroups/{group identifier}" name="{group name}"
       type="application/vnd.tmrk.cloud.layoutGroup">
        <Links>
          <Link href="/layoutRows/{row identifier}" name="{row name}"
           type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>
          <Link href="/layout/environments/{row identifier}" name="{environment name}"
           type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
        </Links>
        <Actions>
          <Action href="/layoutGroups/{group identifier}" name="edit"
           type="application/vnd.tmrk.cloud.layoutGroup"/>
          <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>
          <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>
          <Action href="/layoutGroups/{group Identifier}" name="remove" actionDisabled="{noAccess |
           disabled}"/>
        </Actions>
        <Index>{group index}</Index>
        <VirtualMachines>
          <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
           name}" type="application/vnd.tmrk.cloud.virtualMachine">
            <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
            <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
            <Memory>
              <Unit>{unit of memory value}</Unit>
              <Value>{memory size}</Value>
            </Memory>
            <Storage>
```

```
            <Unit>{unit of storage value}</Unit>
            <Value>{storage size}</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/{operating system short
            name}/computePools/{compute pool identifier}" name="{operating system name}"
            type="application/vnd.tmrk.cloud.operatingSystem"/>
          <PoweredOn>{true | false}</PoweredOn>
          <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
        </VirtualMachine>
          ⋮
      </VirtualMachines>
    </Group>
      ⋮
  </Groups>
 </Row>
  ⋮
</Rows>
</DeviceLayout>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 10391
  Content-Type: application/vnd.tmrk.cloud.deviceLayout
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 12 Sep 2011 21:19:43 GMT
<DeviceLayout href="/layout/computePools/1" type="application/vnd.tmrk.cloud.deviceLayout"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/computePools/1" name="Compute Pool 1" type="application/vnd.tmrk.cloud.computePool"
      rel="alternate"/>
  </Links>
  <Actions>
    <Action href="/layoutRows/environments/1/action/createLayoutRow" name="createLayoutRow"
      type="application/vnd.tmrk.cloud.createLayoutRow"/>
    <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
      type="application/vnd.tmrk.cloud.createLayoutGroup"/>
  </Actions>
  <Rows>
    <Row href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow">
```

```
<Links>
  <Link href="/layout/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
</Links>
<Actions>
  <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
    type="application/vnd.tmrk.cloud.createLayoutGroup"/>
  <Action href="/layoutRows/1" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>
  <Action href="/layoutRows/1/action/moveUp" name="moveUp" actionDisabled="disabled"/>
  <Action href="/layoutRows/1/action/moveDown" name="moveDown" actionDisabled="disabled"/>
  <Action href="/layoutRows/1" name="remove" actionDisabled="disabled"/>
</Actions>
<Index>0</Index>
<Groups>
  <Group href="/layoutGroups/2" name="Layout Group 2"
    type="application/vnd.tmrk.cloud.layoutGroup">
    <Links>
      <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
        rel="up"/>
      <Link href="/layout/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
    </Links>
    <Actions>
      <Action href="/layoutGroups/2" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
      <Action href="/layoutGroups/2/action/orderHigher" name="orderHigher"
        actionDisabled="disabled"/>
      <Action href="/layoutGroups/2/action/orderLower" name="orderLower"
        actionDisabled="disabled"/>
      <Action href="/layoutGroups/2" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Index>1</Index>
    <VirtualMachines>
      <VirtualMachine href="/virtualMachines/4" name="VM4"
        type="application/vnd.tmrk.cloud.virtualMachine">
        <Status>NotDeployed</Status>
        <ProcessorCount>2</ProcessorCount>
        <Memory>
          <Unit>MB</Unit>
          <Value>1024</Value>
        </Memory>
```

```
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/5" name="VM5"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>true</PoweredOn>
    <ToolsStatus>NotRunning</ToolsStatus>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/6" name="VM6"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>CopyInProgress</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
    <PoweredOn>false</PoweredOn>
```

```
          <ToolsStatus>NotRunning</ToolsStatus>
        </VirtualMachine>
      </VirtualMachines>
    </Group>
    <Group href="/layoutGroups/3" name="Layout Group 3"
      type="application/vnd.tmrk.cloud.layoutGroup">
      <Links>
        <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
          rel="up"/>
        <Link href="/layout/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
      </Links>
      <Actions>
        <Action href="/layoutGroups/3" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
        <Action href="/layoutGroups/3/action/orderHigher" name="orderHigher"
          actionDisabled="disabled"/>
        <Action href="/layoutGroups/3/action/orderLower" name="orderLower"
          actionDisabled="disabled"/>
        <Action href="/layoutGroups/3" name="remove" actionDisabled="disabled"/>
      </Actions>
      <Index>2</Index>
    </Group>
  </Groups>
</Row>
<Row href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow">
  <Links>
    <Link href="/layout/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
  </Links>
  <Actions>
    <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
      type="application/vnd.tmrk.cloud.createLayoutGroup"/>
    <Action href="/layoutRows/2" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>
    <Action href="/layoutRows/2/action/moveUp" name="moveUp" actionDisabled="disabled"/>
    <Action href="/layoutRows/2/action/moveDown" name="moveDown" actionDisabled="disabled"/>
    <Action href="/layoutRows/2" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Index>1</Index>
  <Groups>
    <Group href="/layoutGroups/4" name="Layout Group 4"
```

```
type="application/vnd.tmrk.cloud.layoutGroup">
<Links>
  <Link href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow"
    rel="up"/>
  <Link href="/layout/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
</Links>
<Actions>
  <Action href="/layoutGroups/4" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
  <Action href="/layoutGroups/4/action/orderHigher" name="orderHigher"
    actionDisabled="disabled"/>
  <Action href="/layoutGroups/4/action/orderLower" name="orderLower"
    actionDisabled="disabled"/>
  <Action href="/layoutGroups/4" name="remove" actionDisabled="disabled"/>
</Actions>
<Index>3</Index>
<VirtualMachines>
  <VirtualMachine href="/virtualMachines/4" name="VM4"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>NotDeployed</Status>
    <ProcessorCount>2</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>1024</Value>
    </Memory>
    <Storage>
      <Unit>GB</Unit>
      <Value>120</Value>
    </Storage>
    <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </VirtualMachine>
  <VirtualMachine href="/virtualMachines/5" name="VM5"
    type="application/vnd.tmrk.cloud.virtualMachine">
    <Status>Deployed</Status>
    <ProcessorCount>4</ProcessorCount>
    <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
```

```
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
</Group>
<Group href="/layoutGroups/5" name="Layout Group 5"
  type="application/vnd.tmrk.cloud.layoutGroup">
  <Links>
    <Link href="/layoutRows/2" name="Layout Row 2" type="application/vnd.tmrk.cloud.layoutRow"
      rel="up"/>
    <Link href="/layout/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
  </Links>
  <Actions>
    <Action href="/layoutGroups/5" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
```

```
    <Action href="/layoutGroups/5/action/orderHigher" name="orderHigher"
      actionDisabled="disabled"/>
    <Action href="/layoutGroups/5/action/orderLower" name="orderLower"
      actionDisabled="disabled"/>
    <Action href="/layoutGroups/5" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Index>4</Index>
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/4" name="VM4"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>NotDeployed</Status>
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>1024</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>120</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>Deployed</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
```

```
          </VirtualMachine>
          <VirtualMachine href="/virtualMachines/6" name="VM6"
            type="application/vnd.tmrk.cloud.virtualMachine">
            <Status>CopyInProgress</Status>
            <ProcessorCount>4</ProcessorCount>
            <Memory>
              <Unit>MB</Unit>
              <Value>2048</Value>
            </Memory>
            <Storage>
              <Unit>GB</Unit>
              <Value>10</Value>
            </Storage>
            <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
              type="application/vnd.tmrk.cloud.operatingSystem"/>
            <PoweredOn>false</PoweredOn>
            <ToolsStatus>NotRunning</ToolsStatus>
          </VirtualMachine>
        </VirtualMachines>
      </Group>
    </Groups>
  </Row>
 </Rows>
</DeviceLayout>
```


Return to *7.12 Layout*.

Return to *7 Application Programming Interface Reference Guide*.

7.13 Row

7.13.1 Get Layout Rows by ID 584

7.13.2 Action Layout Rows Create 591

7.13.3 Action Layout Rows Edit 592

7.13.4 Action Layout Rows Move Up 593

7.13.5 Action Layout Rows Move Down 594

7.13.6 Action Layout Rows Remove 594

Advance to *7.14 Group*.

This section contains the calls for the Row entity. Rows and groups allow aggregation of servers along logical boundaries defined by the organization.

Return to *7 Application Programming Interface Reference Guide*.

7.13.1 Get Layout Rows by ID

The Get Layout Rows by ID call returns information regarding the groups and network hosts in a specified row in an environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

Request

```
GET http://{Terremark URI}/layoutRows/{row identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/layoutRows/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.layoutRow
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

```
<LayoutRow href="/layoutRows/{row identifier}" name="{row name}"
  type="application/vnd.tmrk.cloud.layoutRow" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
      name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>

    <Action href="/layoutRows/{row identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutRow"/>

    <Action href="/layoutRows/{row identifier}/action/moveUp" name="moveUp"/>

    <Action href="/layoutRows/{row identifier}/action/moveDown" name="moveDown"/>

    <Action href="/layoutRows/{row identifier}" name="remove" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <Index>{row index}</Index>

  <Groups>

    <Group href="/layoutGroups/{group identifier}" name="{group name}"
      type="application/vnd.tmrk.cloud.layoutGroup">

      <Links>

        <Link href="/layoutRows/{row identifier}" name="{row name}"
          type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>

        <Link href="/layout/environments/{row identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

      </Links>

      <Actions>

        <Action href="/layoutGroups/{group identifier}" name="edit"
          type="application/vnd.tmrk.cloud.layoutGroup"/>

        <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>

        <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>

        <Action href="/layoutGroups/{group Identifier}" name="remove" actionDisabled="{noAccess |
          disabled}"/>

      </Actions>

      <Index>{group index}</Index>

      <VirtualMachines>

        <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine
          name}" type="application/vnd.tmrk.cloud.virtualMachine">

          <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>

          <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

          <Memory>

            <Unit>{unit of memory value}</Unit>
```

```
          <Value>{memory size}</Value>
        </Memory>
        <Storage>
          <Unit>{unit of storage value}</Unit>
          <Value>{storage size}</Value>
        </Storage>
        <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
          pool identifier}" name="{operating system name}"
          type="application/vnd.tmrk.cloud.operatingSystem"/>
        <PoweredOn>{true | false}</PoweredOn>
        <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
      </VirtualMachine>
        ⋮
    </VirtualMachines>
    <PhysicalDevices>
      <PhysicalDevice href="/physicalServers/{physical device identifier}" name="{physical device
        name}" type="application/vnd.tmrk.cloud.physicalServer"/>
      <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router
        name}" type="application/vnd.tmrk.cloud.physicalRouter"/>
      <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
        type="application/vnd.tmrk.cloud.haRouter">
      <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
        type="application/vnd.tmrk.cloud.storageDevice"/>
        ⋮
    </PhysicalDevices>
  </Group>
    ⋮
</Groups>
</LayoutRow>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 5736
  Content-Type: application/vnd.tmrk.cloud.layoutRow
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 12 Sep 2011 22:04:11 GMT
<LayoutRow href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/layout/environments/1" name="Environment"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
```

```
    </Links>
    <Actions>
      <Action href="/layoutGroups/environments/1/action/createLayoutGroup" name="createLayoutGroup"
        type="application/vnd.tmrk.cloud.createLayoutGroup"/>
      <Action href="/layoutRows/1" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>
      <Action href="/layoutRows/1/action/moveUp" name="moveUp"/>
      <Action href="/layoutRows/1/action/moveDown" name="moveDown"/>
      <Action href="/layoutRows/1" name="remove"/>
    </Actions>
    <Index>0</Index>
    <Groups>
      <Group href="/layoutGroups/1" name="Layout Group 1" type="application/vnd.tmrk.cloud.layoutGroup">
        <Links>
          <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
            rel="up"/>
          <Link href="/layout/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
        </Links>
        <Actions>
          <Action href="/layoutGroups/1" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
          <Action href="/layoutGroups/1/action/orderHigher" name="orderHigher"/>
          <Action href="/layoutGroups/1/action/orderLower" name="orderLower"/>
          <Action href="/layoutGroups/1" name="remove" actionDisabled="disabled"/>
        </Actions>
        <Index>0</Index>
        <VirtualMachines>
          <VirtualMachine href="/virtualMachines/1" name="VM1"
            type="application/vnd.tmrk.cloud.virtualMachine">
            <Status>NotDeployed</Status>
            <ProcessorCount>2</ProcessorCount>
            <Memory>
              <Unit>MB</Unit>
              <Value>1024</Value>
            </Memory>
            <Storage>
              <Unit>GB</Unit>
              <Value>120</Value>
            </Storage>
            <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
```

```
      Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/2" name="VM2"
     type="application/vnd.tmrk.cloud.virtualMachine">
     <Status>Deployed</Status>
     <ProcessorCount>4</ProcessorCount>
     <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
     </Memory>
     <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
     </Storage>
     <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
     <PoweredOn>true</PoweredOn>
     <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/3" name="VM3"
     type="application/vnd.tmrk.cloud.virtualMachine">
     <Status>CopyInProgress</Status>
     <ProcessorCount>4</ProcessorCount>
     <Memory>
      <Unit>MB</Unit>
      <Value>2048</Value>
     </Memory>
     <Storage>
      <Unit>GB</Unit>
      <Value>10</Value>
     </Storage>
     <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
      type="application/vnd.tmrk.cloud.operatingSystem"/>
     <PoweredOn>false</PoweredOn>
     <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
   </VirtualMachines>
   <PhysicalDevices>
    <PhysicalDevice href="/physicalServers/1" name="Server 1"
```

```
      type="application/vnd.tmrk.cloud.physicalServer"/>

    <PhysicalDevice href="/physicalRouters/1" name="Router 1"
      type="application/vnd.tmrk.cloud.physicalRouter"/>

  </PhysicalDevices>

</Group>

<Group href="/layoutGroups/2" name="Layout Group 2" type="application/vnd.tmrk.cloud.layoutGroup">

  <Links>

    <Link href="/layoutRows/1" name="Layout Row 1" type="application/vnd.tmrk.cloud.layoutRow"
      rel="up"/>

    <Link href="/layout/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/2" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/2/action/orderHigher" name="orderHigher"/>

    <Action href="/layoutGroups/2/action/orderLower" name="orderLower"/>

    <Action href="/layoutGroups/2" name="remove" actionDisabled="disabled"/>

  </Actions>

  <Index>1</Index>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/1" name="VM1"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>NotDeployed</Status>

      <ProcessorCount>2</ProcessorCount>

      <Memory>

        <Unit>MB</Unit>

        <Value>1024</Value>

      </Memory>

      <Storage>

        <Unit>GB</Unit>

        <Value>120</Value>

      </Storage>

      <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>

    </VirtualMachine>

    <VirtualMachine href="/virtualMachines/2" name="VM2"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>Deployed</Status>

      <ProcessorCount>4</ProcessorCount>
```

```
          <Memory>
            <Unit>MB</Unit>
            <Value>2048</Value>
          </Memory>
          <Storage>
            <Unit>GB</Unit>
            <Value>10</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
            type="application/vnd.tmrk.cloud.operatingSystem"/>
          <PoweredOn>true</PoweredOn>
          <ToolsStatus>NotRunning</ToolsStatus>
        </VirtualMachine>
        <VirtualMachine href="/virtualMachines/3" name="VM3"
          type="application/vnd.tmrk.cloud.virtualMachine">
          <Status>CopyInProgress</Status>
          <ProcessorCount>4</ProcessorCount>
          <Memory>
            <Unit>MB</Unit>
            <Value>2048</Value>
          </Memory>
          <Storage>
            <Unit>GB</Unit>
            <Value>10</Value>
          </Storage>
          <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
            type="application/vnd.tmrk.cloud.operatingSystem"/>
          <PoweredOn>false</PoweredOn>
          <ToolsStatus>NotRunning</ToolsStatus>
        </VirtualMachine>
      </VirtualMachines>
    </Group>
  </Groups>
</LayoutRow>
```


Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.13.2 Action Layout Rows Create

The Action Layout Rows Create call creates a new row in an environment. The new row is placed at the bottom of the user interface. If successful, this call returns information regarding the row that was created.

The `name` attribute on <CreateLayoutRow … > is required but need not be unique.

Note: The `name` may not exceed fifty characters.

Request

```
POST http://{Terremark URI}/layoutRows/environments/{environment identifier}/action/createLayoutRow
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutRows/environments/1/action/createLayoutRow
```

Body

```
<CreateLayoutRow name="{row name}"/> <!--Required -->
```

EXAMPLE

```
<CreateLayoutRow name="Layout Row 4"/>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.layoutRow
  Location: /layoutRows/{row identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<LayoutRow href="/layoutRows/{row identifier}" name="{row name}"
  type="application/vnd.tmrk.cloud.layoutRow" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/environments/{environment identifier}/action/createLayoutGroup"
      name="createLayoutGroup" type="application/vnd.tmrk.cloud.createLayoutGroup"/>

    <Action href="/layoutRows/{row identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutRow"/>

    <Action href="/layoutRows/{row identifier}/action/moveUp" name="moveUp"/>

    <Action href="/layoutRows/{row identifier}/action/moveDown" name="moveDown"/>

    <Action href="/layoutRows/{row identifier}" name="remove" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <Index>{row index}</Index>
```

```
</LayoutRow>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 428
  Content-Type: application/vnd.tmrk.cloud.layoutRow
  Location: /layoutRows/4
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:55:48 GMT

<LayoutRow href="/layoutRows/4" name="Layout Row 4" type="application/vnd.tmrk.cloud.layoutRow"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/environments/4/action/createLayoutGroup" name="createLayoutGroup"
      type="application/vnd.tmrk.cloud.createLayoutGroup"/>

    <Action href="/layoutRows/4" name="edit" type="application/vnd.tmrk.cloud.layoutRow"/>

    <Action href="/layoutRows/4/action/moveUp" name="moveUp"/>

    <Action href="/layoutRows/4/action/moveDown" name="moveDown"/>

    <Action href="/layoutRows/4" name="remove" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <Index>3</Index>

</LayoutRow>
```

Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.13.3 Action Layout Rows Edit

The Action Layout Rows Edit call edits the name of a specified row in an environment. If successful, this call returns a 204 No Content header.

The `name` attribute on <LayoutRow … > is required, may be changed, and need not be unique.

Note: The `name` may not exceed fifty characters.

Request

```
PUT http://{Terremark URI}/layoutRows/{row identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/layoutRows/1
```

Body

```
<LayoutRow name="{row name}"/> <!--Required -->
```

EXAMPLE

```
<LayoutRow name="Layout Row 1"/>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:02:49 GMT
```

Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.13.4 Action Layout Rows Move Up

The Action Layout Rows Move Up call changes the position the user interface of a specified row in an environment. Move up moves a row up. If successful, this call returns a 204 No Content header.

Note: The index decrements by one with this call.

Request

```
POST http://{Terremark URI}/layoutRows/{row identifier}/action/moveUp
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutRows/2/action/moveUp
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
    Date: Thu, 09 Jun 2011 22:27:52 GMT
```

Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.13.5 Action Layout Rows Move Down

The Action Layout Rows Move Down call changes the position the user interface of a specified row in an environment. Move down moves a row down. If successful, this call returns a 204 No Content header.

Note: The index increments by one with this call.

Request

```
POST http://{Terremark URI}/layoutRows/{row identifier}/action/moveDown
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutRows/1/action/moveDown
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:28:25 GMT
```

Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.13.6 Action Layout Rows Remove

The Action Layout Rows Remove call removes a specified row from an environment. If successful, this call returns a 204 No Content header.

Note: The index increments by one with this call.

Request

```
DELETE http://{Terremark URI}/layoutRows/{row identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/layoutRows/3
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 17:49:31 GMT
```

Return to *7.13 Row*.

Return to *7 Application Programming Interface Reference Guide*.

7.14 Group

7.14.1 Get Layout Groups by ID 595

7.14.2 Action Layout Groups Create 600

7.14.3 Action Layout Groups Edit 603

7.14.4 Action Layout Groups Order Higher 604

7.14.5 Action Layout Groups Order Lower 605

7.14.6 Action Layout Groups Remove 605

Advance to *7.15 Task*.

This section contains the calls for the Group entity. Rows and groups allow aggregation of servers along logical boundaries defined by the organization.

Return to *7 Application Programming Interface Reference Guide*.

7.14.1 Get Layout Groups by ID

The Get Layout Groups by ID call returns information regarding network hosts in a specified group in an environment.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Status> of the virtual machine. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.

- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Note: A virtual machine with <Status>Orphaned</Status> will contain only <Status>.

<ToolsStatus> refers to VMware Tools. Permitted values are:

- **NotInstalled** – VMware Tools are not installed on the virtual machine.
- **NotRunning** – VMware Tools are installed on the virtual machine but are not running.
- **OutOfDate** – VMware Tools are installed and running on the virtual machine but are not the current version.
- **Current** – VMware Tools are installed on the virtual machine, are running, and are the current version.

Request

```
GET http://{Terremark URI}/layoutGroups/{group identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/layoutGroups/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.layoutGroup
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<LayoutGroup href="/layoutGroups/{group identifier}" name="{group name}"
  type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>

    <Link href="/layout/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/{group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>

    <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>
```

```
    <Action href="/layoutGroups/{group identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>
  </Actions>
  <Index>{group index}</Index>
  <VirtualMachines>
    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
      <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
      <Memory>
        <Unit>{unit of memory value}</Unit>
        <Value>{memory size}</Value>
      </Memory>
      <Storage>
        <Unit>{unit of storage value}</Unit>
        <Value>{storage size}</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute
        pool identifier}" name="{operating system name}"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>{true | false}</PoweredOn>
      <ToolsStatus>{NotInstalled | NotRunning | OutOfDate | Current}</ToolsStatus>
    </VirtualMachine>
      ⋮
  </VirtualMachines>
  <PhysicalDevices>
    <PhysicalDevice href="/physicalServers/{physical device identifier}" name="{physical device name}"
      type="application/vnd.tmrk.cloud.physicalServer"/>
    <PhysicalDevice href="/physicalRouters/{physical router identifier}" name="{physical router name}"
      type="application/vnd.tmrk.cloud.physicalRouter"/>
    <PhysicalDevice href="/haRouters/{HA router identifier}" name="{HA router name}"
      type="application/vnd.tmrk.cloud.haRouter">
    <PhysicalDevice href="/storageDevices/{storage device identifier}" name="{storage device name}"
      type="application/vnd.tmrk.cloud.storageDevice"/>
      ⋮
  </PhysicalDevices>
</LayoutGroup>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2678
```

```
  Content-Type: application/vnd.tmrk.cloud.layoutGroup
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 12 Sep 2011 22:30:58 GMT

<LayoutGroup href="/layoutGroups/1" name="Layout Group 1"
  type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/layoutRows/1" name="Layout Row" type="application/vnd.tmrk.cloud.layoutRow"
      rel="up"/>

    <Link href="/layout/environments/1" name="Environment"
      type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/1" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/1" name="remove" actionDisabled="disabled"/>

    <Action href="/layoutGroups/1/action/orderHigher" name="orderHigher" actionDisabled="disabled"/>

    <Action href="/layoutGroups/1/action/orderLower" name="orderLower"/>

  </Actions>

  <Index>0</Index>

  <VirtualMachines>

    <VirtualMachine href="/virtualMachines/4" name="VM4"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>NotDeployed</Status>

      <ProcessorCount>2</ProcessorCount>

      <Memory>

        <Unit>MB</Unit>

        <Value>1024</Value>

      </Memory>

      <Storage>

        <Unit>GB</Unit>

        <Value>120</Value>

      </Storage>

      <OperatingSystem href="/operatingSystems/win2003ent/computePools/1" name="Windows 2003
        Enterprise Edition" type="application/vnd.tmrk.cloud.operatingSystem"/>

    </VirtualMachine>

    <VirtualMachine href="/virtualMachines/5" name="VM5"
      type="application/vnd.tmrk.cloud.virtualMachine">

      <Status>Deployed</Status>

      <ProcessorCount>4</ProcessorCount>

      <Memory>
```

```
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>true</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
    <VirtualMachine href="/virtualMachines/6" name="VM6"
      type="application/vnd.tmrk.cloud.virtualMachine">
      <Status>CopyInProgress</Status>
      <ProcessorCount>4</ProcessorCount>
      <Memory>
        <Unit>MB</Unit>
        <Value>2048</Value>
      </Memory>
      <Storage>
        <Unit>GB</Unit>
        <Value>10</Value>
      </Storage>
      <OperatingSystem href="/operatingSystems/rhel32/computePools/1" name="Red Hat Linux 32 Bit"
        type="application/vnd.tmrk.cloud.operatingSystem"/>
      <PoweredOn>false</PoweredOn>
      <ToolsStatus>NotRunning</ToolsStatus>
    </VirtualMachine>
  </VirtualMachines>
  <PhysicalDevices>
    <PhysicalDevice href="/physicalServers/1" name="Server 1"
      type="application/vnd.tmrk.cloud.physicalServer"/>
    <PhysicalDevice href="/physicalRouters/1" name="Router 1"
      type="application/vnd.tmrk.cloud.physicalRouter"/>
  </PhysicalDevices>
</LayoutGroup>
```


Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.14.2 Action Layout Groups Create

The Action Layout Groups Create call creates a new group in a specified row in an environment or a new group in a new row. The new group is placed at the end of the row. If successful, this call returns information regarding the group that was created.

The `name` attribute on <CreateLayoutGroup … > is required and need not be unique.

Note: The `name` may not exceed fifty characters.

<LayoutRequest> has two variations. Only one of the two variations is permitted in a call:

1. Add to an existing row.

   <Row> is required and the `href` attribute on the element is required to identify the row in which the new group will be created.

2. Add to a newly created row.

   <NewRow> is required to provide the required name, which may not exceed fifty characters, and to create the row in which the new group will be created.

Request

```
POST http://{Terremark URI}/layoutGroups/environments/{environment
  identifier}/action/createLayoutGroup
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutGroups/environments/1/ …
  action/createLayoutGroup
```

Body

1. Add to an existing row.

```
<CreateLayoutGroup name="{group name}"> <!--Required -->
  <Row href="/layoutRows/{row identifier}" name={row name}
    type="application/vnd.tmrk.cloud.layoutRow"/> <!-- Required -->
</CreateLayoutGroup>
```

EXAMPLE

```
<CreateLayoutGroup name="WebGroup">
  <Row href="/layoutRows/2" name="WebServe" type="application/vnd.tmrk.cloud.layoutRow"/>
</CreateLayoutGroup>
```

2. Add to a newly created row.

```
<CreateLayoutGroup name="{group name}"> <!--Required -->
  <NewRowName>{row name}</NewRowName> <!-- Required -->
</CreateLayoutGroup>
```

EXAMPLE

```
<CreateLayoutGroup name="WebGroup">
  <NewRowName>MyNewRowName</NewRowName>
</CreateLayoutGroup>
```

Response

1. Add to an existing row.

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.layoutGroup
  Location: /layoutGroups/{group identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<LayoutGroup href="/layoutGroups/{group identifier}" name="{group name}"
  type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>
    <Link href="environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/layoutGroups/{group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutGroup"/>
    <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>
    <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>
    <Action href="/layoutGroups/{group Identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>
  </Actions>
  <Index>{group index}</Index>
</LayoutGroup>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 351
  Content-Type: application/vnd.tmrk.cloud.layoutGroup
```

```
  Location: /layoutGroups/4
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:46:04 GMT

<LayoutGroup href="/layoutGroups/4" name="Layout Group 4"
  type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/layoutRows/2" type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>

    <Link href="environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/4" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/4/action/orderHigher" name="orderHigher"/>

    <Action href="/layoutGroups/4/action/orderLower" name="orderLower"/>

    <Action href="/layoutGroups/4" name="remove" actionDisabled="disabled"/>

  </Actions>

  <Index>3</Index>

</LayoutGroup>
```

2. Add to a newly created row.

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.layoutGroup
  Location: /layoutGroups/{group identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<LayoutGroup href="/layoutGroups/{group identifier}" name="{group name}"
  type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/layoutRows/{row identifier}" name="{row name}"
      type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>

    <Link href="environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/layoutGroups/{group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.layoutGroup"/>

    <Action href="/layoutGroups/{group identifier}/action/orderHigher" name="orderHigher"/>

    <Action href="/layoutGroups/{group identifier}/action/orderLower" name="orderLower"/>

    <Action href="/layoutGroups/{group Identifier}" name="remove" actionDisabled="{noAccess |
```

```
      disabled}"/>
    </Actions>
    <Index>{group index}</Index>
  </LayoutGroup>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 2287
    Content-Type: application/vnd.tmrk.cloud.layoutGroup
    Location: /layoutGroups/4
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 08 Jul 2011 21:40:57 GMT
  <LayoutGroup href="/layoutGroups/4" name="Layout Group 4"
    type="application/vnd.tmrk.cloud.layoutGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/layoutRows/5" type="application/vnd.tmrk.cloud.layoutRow" rel="up"/>
      <Link href="/layout/environments/1" type="application/vnd.tmrk.cloud.deviceLayout" rel="up"/>
    </Links>
    <Actions>
      <Action href="/layoutGroups/4" name="edit" type="application/vnd.tmrk.cloud.layoutGroup"/>
      <Action href="/layoutGroups/4" name="remove" actionDisabled="disabled"/>
      <Action href="/layoutGroups/4/action/orderHigher" name="orderHigher"/>
      <Action href="/layoutGroups/4/action/orderLower" name="orderLower" actionDisabled="disabled"/>
    </Actions>
    <Index>3</Index>
  </LayoutGroup>
```

Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.14.3 Action Layout Groups Edit

The Action Layout Groups Edit call edits the name of a specified group in an environment. If successful, this call returns a 204 No Content header.

The `name` attribute on <LayoutGroup … > is required, may be changed, and need not be unique.

Note: The `name` may not exceed fifty characters.

Request

```
  PUT http://{Terremark URI}/layoutGroups/{group identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/layoutGroups/1
```

Body

```
<LayoutGroup name="{group name}"/> <!--Required -->
```

EXAMPLE

```
<LayoutGroup name="Layout Group 1"/>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 21:45:18 GMT
```

Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.14.4 Action Layout Groups Order Higher

The Action Layout Groups Order Higher call changes the position the user interface of a specified group in an environment. Order higher moves a group to the left and, if necessary, up. If successful, this call returns a 204 No Content header.

Note: The index decrements by one with this call.

Request

```
POST http://{Terremark URI}/layoutGroups/{group identifier}/action/orderHigher
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutGroups/2/action/orderHigher
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:18:35 GMT
```

Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.14.5 Action Layout Groups Order Lower

The Action Layout Groups Order Lower call changes the position the user interface of a specified group in an environment. Order lower moves a group to the right and, if necessary, down. If successful, this call returns a 204 No Content header.

Note: The index increments by one with this call.

Request

```
POST http://{Terremark URI}/layoutGroups/{group identifier}/action/orderLower
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/layoutGroups/1/action/orderLower
```

Body

```
none
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 22:21:28 GMT
```

Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.14.6 Action Layout Groups Remove

The Action Layout Groups Remove call removes a specified group from an environment. If successful, this call returns a 204 No Content header.

Request

```
DELETE http://{Terremark URI}/layoutGroups/{group identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/layoutGroups/3
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 17:54:03 GMT
```

Return to *7.14 Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.15 Task

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Advance to *7.16 Detached* Disk.

Return to *7 Application Programming Interface Reference Guide*.

7.15.1 Get Tasks

The Get Tasks call returns information regarding the tasks in an environment. The task list is a history of changes to the environment. Tasks are retained for twelve months.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

This call may include optional query parameters. Separate query parameters from the call URI with a question mark (?) and separate parameters from each other with an ampersand (&). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = page 1
pageSize	Number of items returned per page between 1 and 1000; default = 20
startDate	Enter in ISO8601 format; time is always start of day and if entered is ignored; default = earliest record
endDate	Enter in ISO8601 format; time is always end of day and if entered is ignored; default = latest record
direction	asc ascending desc descending default = descending
sortBy	All Task elements are permitted as the sort key: • ImpactedItem • Operation • Notes • Status • InitiatedBy • StartTime • CompletedTime

Request

```
GET http://{Terremark URI}/tasks/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/environments/{environment identifier}" type="application/vnd.tmrk.cloud.task;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/tasks/environments/{environment identifier}?sortBy={ImpactedItem | Operation | Notes
      | Status | InitiatedBy | StartTime | CompletedTime}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="first"/>

    <Link href="/tasks/environments/{environment identifier}?sortBy={ImpactedItem | Operation | Notes
      | Status | InitiatedBy | StartTime | CompletedTime}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="previous"/>

    <Link href="/tasks/environments/{environment identifier}?sortBy={ImpactedItem | Operation | Notes
      | Status | InitiatedBy | StartTime | CompletedTime}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="next"/>

    <Link href="/tasks/environments/{environment identifier}?sortBy={ImpactedItem | Operation | Notes
      | Status | InitiatedBy | StartTime | CompletedTime}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" type="application/vnd.tmrk.cloud.task; type=collection"
      rel="last"/>

  </Links>

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
```

```
      type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
     ⋮
    <TotalCount>{count of tasks for entity}</TotalCount>
  </Tasks>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 11778
    Content-Type: application/vnd.tmrk.cloud.task; type=collection
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 13 Sep 2011 13:23:36 GMT
  <Tasks href="/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=collection"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
      <Link href="/tasks/environments/1?page=2&amp;pagesize=20" type="" rel="next"/>
      <Link href="/tasks/environments/1?page=50&amp;pagesize=20" type="" rel="last"/>
    </Links>
    <Task href="/tasks/1000" type="application/vnd.tmrk.cloud.task">
      <Operation>Create Firewall Rule</Operation>
      <Status>Complete</Status>
      <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
        type="application/vnd.tmrk.cloud.firewallAcl"/>
      <StartTime>2011-09-13T06:04:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T06:13:36.5570719Z</CompletedTime>
      <Notes>sample notes here1000</Notes>
      <ErrorMessage/>
      <InitiatedBy href="/admin/users/1000" name="user 1000"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/999" type="application/vnd.tmrk.cloud.task">
      <Operation>Create Server</Operation>
      <Status>Running</Status>
      <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
        type="application/vnd.tmrk.cloud.virtualMachine"/>
      <StartTime>2011-09-13T06:03:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T06:12:36.5570719Z</CompletedTime>
      <Notes>sample notes here999</Notes>
```

```
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/999" name="user 999"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/998" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Public IP</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/publicIps/1" name="sample public ip 1"
      type="application/vnd.tmrk.cloud.publicIp"/>
    <StartTime>2011-09-13T06:02:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:11:36.5570719Z</CompletedTime>
    <Notes>sample notes here998</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/998" name="user 998"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/997" type="application/vnd.tmrk.cloud.task">
    <Operation>Add RNAT Association</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
      type="application/vnd.tmrk.cloud.ipAddress"/>
    <StartTime>2011-09-13T06:01:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:10:36.5570719Z</CompletedTime>
    <Notes>sample notes here997</Notes>
    <ErrorMessage>sample error message here997</ErrorMessage>
    <InitiatedBy href="/admin/users/997" name="user 997"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/996" type="application/vnd.tmrk.cloud.task">
    <Operation>Add RNAT Association</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/networks/1" name="sample network 1"
      type="application/vnd.tmrk.cloud.network"/>
    <StartTime>2011-09-13T06:00:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:09:36.5570719Z</CompletedTime>
    <Notes>sample notes here996</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/996" name="user 996"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    </Task>
    <Task href="/tasks/995" type="application/vnd.tmrk.cloud.task">
      <Operation>Add Node Service</Operation>
      <Status>Running</Status>
      <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
        type="application/vnd.tmrk.cloud.nodeService"/>
      <StartTime>2011-09-13T05:59:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T06:08:36.5570719Z</CompletedTime>
      <Notes>sample notes here995</Notes>
      <ErrorMessage/>
      <InitiatedBy href="/admin/users/995" name="user 995"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/994" type="application/vnd.tmrk.cloud.task">
      <Operation>Add Internet Service</Operation>
      <Status>Queued</Status>
      <ImpactedItem href="/internetServices/1" name="sample internet 1"
        type="application/vnd.tmrk.cloud.internetService"/>
      <StartTime>2011-09-13T05:58:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T06:07:36.5570719Z</CompletedTime>
      <Notes>sample notes here994</Notes>
      <ErrorMessage/>
      <InitiatedBy href="/admin/users/994" name="user 994"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/993" type="application/vnd.tmrk.cloud.task">
      <Operation>Add Trusted Network Group</Operation>
      <Status>Error</Status>
      <ImpactedItem href="/trustedNetworkGroups/1" name="sample trusted network group 1"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
      <StartTime>2011-09-13T05:57:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T06:06:36.5570719Z</CompletedTime>
      <Notes>sample notes here993</Notes>
      <ErrorMessage>sample error message here993</ErrorMessage>
      <InitiatedBy href="/admin/users/993" name="user 993"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/992" type="application/vnd.tmrk.cloud.task">
      <Operation>Activate Device</Operation>
```

```
    <Status>Complete</Status>
    <ImpactedItem href="/storageDevices/1" name="sample storage device 1"
      type="application/vnd.tmrk.cloud.storageDevice"/>
    <StartTime>2011-09-13T05:56:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:05:36.5570719Z</CompletedTime>
    <Notes>sample notes here992</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/992" name="user 992"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/991" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Device</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/haRouters/1" name="sample ha router 1"
      type="application/vnd.tmrk.cloud.haRouter"/>
    <StartTime>2011-09-13T05:55:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:04:36.5570719Z</CompletedTime>
    <Notes>sample notes here991</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/991" name="user 991"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/990" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Device</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/physicalRouters/1" name="sample physical router 1"
      type="application/vnd.tmrk.cloud.physicalRouter"/>
    <StartTime>2011-09-13T05:54:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T06:03:36.5570719Z</CompletedTime>
    <Notes>sample notes here990</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/990" name="user 990"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/989" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Device</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/physicalServers/1" name="sample physical server 1"
      type="application/vnd.tmrk.cloud.physicalServer"/>
```

```
    <StartTime>2011-09-13T05:53:36.5570719Z</StartTime>

    <CompletedTime>2011-09-13T06:02:36.5570719Z</CompletedTime>

    <Notes>sample notes here989</Notes>

    <ErrorMessage>sample error message here989</ErrorMessage>

    <InitiatedBy href="/admin/users/989" name="user 989"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/988" type="application/vnd.tmrk.cloud.task">

    <Operation>Enable Processor Burst</Operation>

    <Status>Complete</Status>

    <ImpactedItem href="/computePools/1" name="sample compute pool 1"
      type="application/vnd.tmrk.cloud.computePool"/>

    <StartTime>2011-09-13T05:52:36.5570719Z</StartTime>

    <CompletedTime>2011-09-13T06:01:36.5570719Z</CompletedTime>

    <Notes>sample notes here988</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/988" name="user 988"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/987" type="application/vnd.tmrk.cloud.task">

    <Operation>Configure Firewall Log Host</Operation>

    <Status>Running</Status>

    <ImpactedItem href="/firewallLogs/environments/1" name="sample firewall log 1"
      type="application/vnd.tmrk.cloud.firewallLog"/>

    <StartTime>2011-09-13T05:51:36.5570719Z</StartTime>

    <CompletedTime>2011-09-13T06:00:36.5570719Z</CompletedTime>

    <Notes>sample notes here987</Notes>

    <ErrorMessage/>

    <InitiatedBy href="/admin/users/987" name="user 987"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <Task href="/tasks/986" type="application/vnd.tmrk.cloud.task">

    <Operation>Create Firewall Rule</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/firewallAcls/custom/1" name="sample firewall acl 1"
      type="application/vnd.tmrk.cloud.firewallAcl"/>

    <StartTime>2011-09-13T05:50:36.5570719Z</StartTime>

    <CompletedTime>2011-09-13T05:59:36.5570719Z</CompletedTime>

    <Notes>sample notes here986</Notes>
```

```
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/986" name="user 986"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/985" type="application/vnd.tmrk.cloud.task">
    <Operation>Create Server</Operation>
    <Status>Error</Status>
    <ImpactedItem href="/virtualMachines/1" name="sample virtual machine 1"
      type="application/vnd.tmrk.cloud.virtualMachine"/>
    <StartTime>2011-09-13T05:49:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T05:58:36.5570719Z</CompletedTime>
    <Notes>sample notes here985</Notes>
    <ErrorMessage>sample error message here985</ErrorMessage>
    <InitiatedBy href="/admin/users/985" name="user 985"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/984" type="application/vnd.tmrk.cloud.task">
    <Operation>Activate Public IP</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/publicIps/1" name="sample public ip 1"
      type="application/vnd.tmrk.cloud.publicIp"/>
    <StartTime>2011-09-13T05:48:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T05:57:36.5570719Z</CompletedTime>
    <Notes>sample notes here984</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/984" name="user 984"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <Task href="/tasks/983" type="application/vnd.tmrk.cloud.task">
    <Operation>Add RNAT Association</Operation>
    <Status>Running</Status>
    <ImpactedItem href="/ipAddresses/networks/1/1.1.1.1" name="sample ip address 1"
      type="application/vnd.tmrk.cloud.ipAddress"/>
    <StartTime>2011-09-13T05:47:36.5570719Z</StartTime>
    <CompletedTime>2011-09-13T05:56:36.5570719Z</CompletedTime>
    <Notes>sample notes here983</Notes>
    <ErrorMessage/>
    <InitiatedBy href="/admin/users/983" name="user 983"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    </Task>
    <Task href="/tasks/982" type="application/vnd.tmrk.cloud.task">
      <Operation>Add RNAT Association</Operation>
      <Status>Queued</Status>
      <ImpactedItem href="/networks/1" name="sample network 1"
        type="application/vnd.tmrk.cloud.network"/>
      <StartTime>2011-09-13T05:46:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T05:55:36.5570719Z</CompletedTime>
      <Notes>sample notes here982</Notes>
      <ErrorMessage/>
      <InitiatedBy href="/admin/users/982" name="user 982"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/981" type="application/vnd.tmrk.cloud.task">
      <Operation>Add Node Service</Operation>
      <Status>Error</Status>
      <ImpactedItem href="/nodeServices/1" name="sample node internet 1"
        type="application/vnd.tmrk.cloud.nodeService"/>
      <StartTime>2011-09-13T05:45:36.5570719Z</StartTime>
      <CompletedTime>2011-09-13T05:54:36.5570719Z</CompletedTime>
      <Notes>sample notes here981</Notes>
      <ErrorMessage>sample error message here981</ErrorMessage>
      <InitiatedBy href="/admin/users/981" name="user 981"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>1000</TotalCount>
  </Tasks>
```


Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.2 Get Tasks by ID

The Get Tasks by ID call returns information regarding a specified task in an environment. A task is a history of a change to the environment. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.

- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/{task identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>{name of action performed}</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 525
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:02:19 GMT

<Task href="/tasks/3" type="application/vnd.tmrk.cloud.task"
```

```
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Operation>Enable Processor Burst</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/computePools/1" name="sample compute pool"
      type="application/vnd.tmrk.cloud.computePool"/>
    <StartTime>2011-06-02T17:02:19.7461673Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.3 Get Tasks by Virtual Machine

The Get Tasks by Virtual Machine call returns information regarding tasks for a specified virtual machine in an environment. The task list is a history of changes to the virtual machine. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/virtualMachines/11
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
```

```
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{count of tasks for entity}</TotalCount>

</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1883
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:58:16 GMT

<Tasks href="/tasks/virtualMachines/1" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

    <Operation>Power on Server</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/virtualMachines/1" name="sample device name"
      type="application/vnd.tmrk.cloud.virtualMachine"/>

    <StartTime>2011-06-02T17:58:16.0341673Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>
```

```
    <Task href="/tasks/2" type="application/vnd.tmrk.cloud.task">
      <Operation>Power off Server</Operation>
      <Status>Failed</Status>
      <ImpactedItem href="/virtualMachines/1" name="sample device name"
        type="application/vnd.tmrk.cloud.virtualMachine"/>
      <StartTime>2011-06-02T17:06:16.0341673Z</StartTime>
      <CompletedTime>2011-06-02T17:08:16.0341673Z</CompletedTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">
      <Operation>Create Server</Operation>
      <Status>Success</Status>
      <ImpactedItem href="/virtualMachines/1" name="sample device name"
        type="application/vnd.tmrk.cloud.virtualMachine"/>
      <StartTime>2011-06-02T16:53:16.0341673Z</StartTime>
      <CompletedTime>2011-06-02T16:58:16.0341673Z</CompletedTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>3</TotalCount>
  </Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.4 Get Tasks by Physical Server

The Get Tasks by Physical Server call returns information regarding tasks for a specified physical server in an environment. The task list is a history of changes to the physical server. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/physicalServers/{physical server identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/physicalServers/11
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/physicalServers/{physical server identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{count of tasks for entity}</TotalCount>

</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 794
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
```

```
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:27:40 GMT

<Tasks href="/tasks/physicalServers/11" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

    <Operation>Edit Physical Server</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/physicalServers/11" name="sample device name"
      type="application/vnd.tmrk.cloud.physicalServer"/>

    <StartTime>2011-06-02T17:27:40.4091673Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <TotalCount>1</TotalCount>

</Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.5 Get Tasks by Physical Router

The Get Tasks by Physical Router call returns information regarding tasks for a specified physical router in an environment. The task list is a history of changes to the physical router. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/physicalRouters/{physical router identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/physicalRouters/12
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/physicalRouters/{physical router identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{count of tasks for entity}</TotalCount>

</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 794
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:37:19 GMT

<Tasks href="/tasks/physicalRouters/12" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

    <Operation>Edit Physical Router</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/physicalRouters/12" name="sample device name"
      type="application/vnd.tmrk.cloud.physicalRouter"/>
```

```
    <StartTime>2011-06-02T17:37:19.8691673Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <TotalCount>1</TotalCount>
</Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.6 Get Tasks by High Availability Router

The Get Tasks by High Availability Router call returns information regarding tasks for a specified high availability router in an environment. The task list is a history of changes to the high availability router. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/haRouters/{HA router identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/haRouters/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<Tasks href="/tasks/haRouters/{HA router identifier}" type="application/vnd.tmrk.cloud.task;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{count of tasks for entity}</TotalCount>

</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 769
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:42:41 GMT

<Tasks href="/haRouters/4" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

    <Operation>Edit HA Router</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/haRouters/4" name="sample device name"
      type="application/vnd.tmrk.cloud.haRouter"/>

    <StartTime>2011-06-02T17:42:41.3601673Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <TotalCount>1</TotalCount>

</Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.7 Get Tasks by Storage Device

The Get Tasks by Storage Device call returns information regarding tasks for a specified storage device in an environment. The task list is a history of changes to the storage device. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.
- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/storageDevices/{storage device identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/storageDevices/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/storageDevices/{storage device identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>
```

```
    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{count of tasks for entity}</TotalCount>

</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 785
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 17:49:26 GMT

<Tasks href="/tasks/storageDevices/4" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">

    <Operation>Edit Storage Device</Operation>

    <Status>Queued</Status>

    <ImpactedItem href="/storageDevices/4" name="sample device name"
      type="application/vnd.tmrk.cloud.storageDevice"/>

    <StartTime>2011-06-02T17:49:26.7751673Z</StartTime>

    <Notes>Some notes about the operation.</Notes>

    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

  <TotalCount>1</TotalCount>

</Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.15.8 Get Tasks by Detached Disk

The Get Tasks by Detached Disk call returns information regarding tasks for a specified detached disk in a compute pool. The task list is a history of changes to the detached disk. Tasks are retained for twelve months.

<Status> refers to the status of the task. Permitted values are:

- **Queued** – the task is queued for execution.

- **Running** – the task is running.
- **Failed** – the task failed.
- **Success** – the task completed successfully.
- **Error** – the task failed with an error.

<Deleted> is applicable and appears only when virtual machine have been removed subsequent to the time of the snapshot.

<CompletedTime> is not applicable to <Status>Queued</Status> or <Status>Running</Status> and is not included in the response.

Request

```
GET http://{Terremark URI}/tasks/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/tasks/detachedDisks/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tasks href="/tasks/detachedDisks/{detached disk identifier}" type="application/vnd.tmrk.cloud.task;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮
```

```
  <TotalCount>{count of tasks for entity}</TotalCount>
</Tasks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 725
  Content-Type: application/vnd.tmrk.cloud.task; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 17:25:01 GMT
<Tasks href="/tasks/detachedDisks/4" type="application/vnd.tmrk.cloud.task; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">
    <Operation>Rename Detached Virtual Disk</Operation>
    <Status>Complete</Status>
    <ImpactedItem href="/detachedDisks/4" name="sample device name"
      type="application/vnd.tmrk.cloud.detachedDisk"/>
    <StartTime>2012-01-13T17:15:02.1954258Z</StartTime>
    <CompletedTime>2012-01-13T17:20:02.1954258Z</CompletedTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
  <TotalCount>1</TotalCount>
</Tasks>
```

Return to *7.15 Task*.

Return to *7 Application Programming Interface Reference Guide*.

7.16 Detached Disk

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Advance to *7.17 Retry Operation*.

Disks that have been detached from virtual machines may be managed.

Return to *7 Application Programming Interface Reference Guide*.

7.16.1 Get Detached Disks

The Get Detached Disks call returns information regarding the disks detached in a compute pool.

<LastKnownVirtualMachineConfiguration … > contains the configuration, where the `name` attribute is the name, of the virtual machine from which the disk was detached.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Type> refers to the type of content on the disk when attached to the last virtual machine. Permitted values are:

- **System** – disk contained the operating system.
- **Data** – disk contained no operating system.

<Status> refers to the status of the detached disk. Permitted values are:

- **Available** – disk is in storage and available to attach.
- **AttachInProgress** – disk is in the process of attaching to a VM and unavailable.
- **DetachInProgress** – disk is in the process of detaching from a VM and unavailable.

Request

```
GET http://{Terremark URI}/detachedDisks/computePools/{compute pool identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/detachedDisks/computePools/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DetachedDisks href="/detachedDisks/computePools/{compute pool identifier}"
  type="application/vnd.tmrk.cloud.detachedDisk; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">>

  <Links>

    <Link href="/computePools/{compute pool identifier}" name="{compute pool name}"
      type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
    type="application/vnd.tmrk.cloud.detachedDisk">

    <Links>

      <Link href="/detachedDisks/computePools/{compute pool identifier}"
        type="application/vnd.tmrk.cloud.detachedDisk; type=collection" rel="up"/>

    </Links>
```

```
<Actions>
  <Action href="/detachedDisks/{detached disk identifier}" name="edit"
    type="application/vnd.tmrk.cloud.detachedDisk"/>
  <Action href="/detachedDisks/{detached disk identifier}" name="remove"/>
</Actions>
<Tasks href="/tasks/detachedDisks/{detached disk identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection">
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running --
      >
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
    ⋮
  <TotalCount>{count of tasks for entity}</TotalCount>
</Tasks>
<Description>{textual description}</Description>
<LastKnownVirtualMachineConfiguration name="{virtual machine name}">
  <ProcessorCount>2</ProcessorCount>
  <Memory>
    <Unit>{unit of memory value}</Unit>
    <Value>{memory size}</Value>
  </Memory>
  <OperatingSystem href="/operatingSystems/win32/computePools/{compute pool identifier}"
    name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
</LastKnownVirtualMachineConfiguration>
<Type>{System | Data}</Type>
<Size>
  <Unit>{unit of disk size value}</Unit>
  <Value>{disk size}</Value>
</Size>
```

```
    <Status>{Available | AttachInProgress | DetachInProgress}</Status>
  </DetachedDisk>
    ⋮
</DetachedDisks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3552
  Content-Type: application/vnd.tmrk.cloud.detachedDisk; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Dec 2011 17:07:43 GMT

<DetachedDisks href="/detachedDisks/computePools/1" type="application/vnd.tmrk.cloud.detachedDisk;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <DetachedDisk href="/detachedDisks/1" name="Detached Disk1"
    type="application/vnd.tmrk.cloud.detachedDisk">

    <Links>

      <Link href="/detachedDisks/computePools/1" type="application/vnd.tmrk.cloud.detachedDisk;
        type=collection" rel="up"/>

    </Links>

    <Actions>

      <Action href="/detachedDisks/1" name="edit" type="application/vnd.tmrk.cloud.detachedDisk"/>

      <Action href="/detachedDisks/1" name="remove"/>

    </Actions>

    <Tasks href="/tasks/detachedDisks/1" type="application/vnd.tmrk.cloud.task; type=collection">

      <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">

        <Operation>Detach Disk</Operation>

        <Status>Complete</Status>

        <ImpactedItem href="/detachedDisks/1" name="VirtualMachine1"
          type="application/vnd.tmrk.cloud.detachedDisk"/>

        <StartTime>2011-06-21T15:00:32.357</StartTime>

        <CompletedTime>2011-06-21T15:02:32.357</CompletedTime>

        <Notes>Some notes about the operation.</Notes>

        <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

      </Task>

      <TotalCount>1</TotalCount>

    </Tasks>

    <Description>Example detached Virtual Disk</Description>
```

```
    <LastKnownVirtualMachineConfiguration name="VM 1">
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>GB</Unit>
        <Value>8</Value>
      </Memory>
      <OperatingSystem href="/operatingSystems/windows%202003%20enterprise%20edition/computePools/1"
        name="win2003ent" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </LastKnownVirtualMachineConfiguration>
    <Type>Data</Type>
    <Size>
      <Unit>GB</Unit>
      <Value>4</Value>
    </Size>
    <Status>Available</Status>
  </DetachedDisk>
  <DetachedDisk href="/detachedDisks/3" name="Detached Disk3"
    type="application/vnd.tmrk.cloud.detachedDisk">
    <Links>
      <Link href="/detachedDisks/computePools/1" type="application/vnd.tmrk.cloud.detachedDisk;
        type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/detachedDisks/3" name="edit" type="application/vnd.tmrk.cloud.detachedDisk"/>
      <Action href="/detachedDisks/3" name="remove"/>
    </Actions>
    <Tasks href="/tasks/detachedDisks/3" type="application/vnd.tmrk.cloud.task; type=collection">
      <Task href="/tasks/3" type="application/vnd.tmrk.cloud.task">
        <Operation>Detach Disk</Operation>
        <Status>Complete</Status>
        <ImpactedItem href="/detachedDisks/3" name="VirtualMachine3"
          type="application/vnd.tmrk.cloud.detachedDisk"/>
        <StartTime>2011-06-21T15:00:32.357</StartTime>
        <CompletedTime>2011-06-21T15:02:32.357</CompletedTime>
        <Notes>Some notes about the operation.</Notes>
        <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
      </Task>
      <TotalCount>1</TotalCount>
```

```
      </Tasks>
      <Description>Example detached Virtual Disk</Description>
      <LastKnownVirtualMachineConfiguration name="VM 1">
        <ProcessorCount>2</ProcessorCount>
        <Memory>
          <Unit>GB</Unit>
          <Value>8</Value>
        </Memory>
        <OperatingSystem href="/operatingSystems/windows%202003%20enterprise%20edition/computePools/1"
          name="win2003ent" type="application/vnd.tmrk.cloud.operatingSystem"/>
      </LastKnownVirtualMachineConfiguration>
      <Type>Data</Type>
      <Size>
        <Unit>GB</Unit>
        <Value>4</Value>
      </Size>
      <Status>Available</Status>
    </DetachedDisk>
  </DetachedDisks>
```

Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.16.2 Get Detached Disks by ID

The Get Detached Disks by ID call returns information regarding a specified disk detached in a compute pool.

<LastKnownVirtualMachineConfiguration … > contains the configuration of, and the `name` attribute is the name of, the virtual machine from which the disk was detached.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

<Type> refers to the type of content on the disk when attached to the last virtual machine. Permitted values are:

- **System** – disk contained the operating system.
- **Data** – disk contained no operating system.

<Status> refers to the status of the detached disk. Permitted values are:

- **Available** – disk is in storage and available to attach.
- **AttachInProgress** – disk is in the process of attaching to a VM and unavailable.
- **DetachInProgress** – disk is in the process of detaching from a VM and unavailable.

<PendingRetryOperation … > will appear only if an operation is pending a retry after failing. The `href` and `type` will have values appropriate to only one of the possible pending operations:

- `<PendingRetryOperation href="/detachDiskRetryOperations/detachedDisks/{detached disk identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation">`
- `<PendingRetryOperation href="/attachDiskRetryOperations/detachedDisks/{detached disk identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation">`

Request

```
GET http://{Terremark URI}/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/detachedDisks/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
  type="application/vnd.tmrk.cloud.detachedDisk" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">>

  <Links>

    <Link href="/computePools/{compute pool identifier}" name="{compute pool name}"
      type="application/vnd.tmrk.cloud.computePool" rel="up"/>

  </Links>

  <Actions>

    <Action href="/detachedDisks/{detached disk identifier}" name="edit"
      type="application/vnd.tmrk.cloud.detachedDisk" actionDisabled="{noAccess | disabled}"/>

    <Action href="/detachedDisks/{detached disk identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

  </Actions>

  <Tasks href="/tasks/detachedDisks/{task identifier}" type="application/vnd.tmrk.cloud.task;
    type=collection">

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>
```

```
      <StartTime>{time action started}</StartTime>
      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
      <Notes>{notes on action}</Notes>
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
      ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Description>{textual description}</Description>
  <LastKnownVirtualMachineConfiguration name="{virtual machine name}">
    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
      identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </LastKnownVirtualMachineConfiguration>
  <Type>{System | Data}</Type>
  <Size>
    <Unit>{unit of disk size value}</Unit>
    <Value>{disk size}</Value>
  </Size>
  <Status>{Available | AttachInProgress | DetachInProgress}</Status>
  <PendingRetryOperation href="/{detachDiskRetryOperations |
    attachDiskRetryOperations}/detachedDisks/{detached disk identifier}"
    type="application/vnd.tmrk.cloud.{detachDiskRetryOperation | attachDiskRetryOperation}">
</DetachedDisk>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1672
  Content-Type: application/vnd.tmrk.cloud.detachedDisk
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Dec 2011 16:50:59 GMT

<DetachedDisk href="/detachedDisks/1" name="Detached Disk1"
  type="application/vnd.tmrk.cloud.detachedDisk" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <Links>
      <Link href="/computePools/1" type="application/vnd.tmrk.cloud.computePool" rel="up"/>
    </Links>
    <Actions>
      <Action href="/detachedDisks/1" name="edit" type="application/vnd.tmrk.cloud.detachedDisk"/>
      <Action href="/detachedDisks/1" name="remove"/>
    </Actions>
    <Tasks href="/tasks/detachedDisks/1" type="application/vnd.tmrk.cloud.task; type=collection">
      <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task">
        <Operation>Detach Disk</Operation>
        <Status>Complete</Status>
        <ImpactedItem href="/detachedDisks/1" name="VirtualMachine1"
         type="application/vnd.tmrk.cloud.detachedDisk"/>
        <StartTime>2011-06-21T15:00:32.357</StartTime>
        <CompletedTime>2011-06-21T15:02:32.357</CompletedTime>
        <Notes>Some notes about the operation.</Notes>
        <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
      </Task>
      <TotalCount>1</TotalCount>
    </Tasks>
    <Description>Example detached Virtual Disk</Description>
    <LastKnownVirtualMachineConfiguration name="VM 1">
      <ProcessorCount>2</ProcessorCount>
      <Memory>
        <Unit>GB</Unit>
        <Value>8</Value>
      </Memory>
      <OperatingSystem href="/operatingSystems/windows%202003%20enterprise%20edition/computePools/1"
        name="win2003ent" type="application/vnd.tmrk.cloud.operatingSystem"/>
    </LastKnownVirtualMachineConfiguration>
    <Type>Data</Type>
    <Size>
      <Unit>GB</Unit>
      <Value>4</Value>
    </Size>
    <Status>Available</Status>
  </DetachedDisk>
```


Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.16.3 Action Detached Disks Edit

The Action Detached Disks Edit call edits the name or description on a detached disk defined in a compute pool. If successful, the call returns the task that modified the the detached disk.

The `name` attribute on <DetachedDisk … > is required, may be changed, and need not be unique.

Note: The `name` may not exceed fifteen characters.

<Description> is optional but if present the description must not exceed one hundred characters.

Note: To remove the description an empty element, <Description/>, must be in the body.

<LastKnownVirtualMachineConfiguration … > and its children, <Type>, <Size> and its children, and <Status> are optional and ignored if present.

Request

```
PUT http://{Terremark URI}/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/detachedDisks/1
```

Body

```
<DetachedDisk href="/detachedDisks/1" name="DetachedDisk1"
  type="application/vnd.tmrk.cloud.detachedDisk"> <!-- name required -->
  <Description>My Description</Description> <!-- Optional -->
  <LastKnownVirtualMachineConfiguration name="{virtual machine name}"> <!-- Optional, ignored if
    present -->
    <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>
    <Memory>
      <Unit>{unit of memory value}</Unit>
      <Value>{memory size}</Value>
    </Memory>
    <OperatingSystem href="/operatingSystems/{operating system short name}/computePools/{compute pool
      identifier}" name="{operating system name}" type="application/vnd.tmrk.cloud.operatingSystem"/>
  </LastKnownVirtualMachineConfiguration>
  <Type>{System | Data}</Type> <!-- Optional, ignored if present -->
  <Size> <!-- Optional, ignored if present -->
    <Unit>{unit of disk size value}</Unit>
    <Value>{disk size}</Value>
  </Size>
  <Status>{Available | AttachInProgress | DetachInProgress}</Status> <!-- Optional, ignored if
```

```
    present -->
  </DetachedDisk>
```

EXAMPLE

```
  <DetachedDisk name="DetachedDisk1">
    <Description>My Description</Description>
  </DetachedDisk>
```

Response

```
  HTTP/1.1 202 Accepted
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.task
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Operation>Rename Detached Virtual Disk</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
```

EXAMPLE

```
  HTTP/1.1 202 Accepted
    Content-Length: 514
    Content-Type: application/vnd.tmrk.cloud.task
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 13 Jan 2012 17:28:54 GMT
  <Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Operation>Rename Detached Virtual Disk</Operation>
    <Status>Queued</Status>
    <ImpactedItem href="/detachedDisks/1" type="application/vnd.tmrk.cloud.detachedDisk"/>
    <StartTime>2012-01-13T17:28:54.6373886Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
```

```
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.16.4 Action Detached Disks Remove

The Action Detached Disks Remove call removes a specified detached disk from the compute pool. If successful, the call returns the task that removed the detached disk.

Note: To remove a detached disk requires a <Status> value of `Available`.

Request

```
DELETE http://{Terremark URI}/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/detachedDisks/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Detached Virtual Disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 513
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 03 Jan 2012 22:30:09 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Detached Virtual Disk</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/detachedDisks/1" type="application/vnd.tmrk.cloud.detachedDisk"/>

  <StartTime>2012-01-03T22:30:10.807296Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.16 Detached Disk*.

Return to *7 Application Programming Interface Reference Guide*.

7.17 Retry Operation

7.17.1 Get Retry Operations Detach Disk by Virtual Machine 640
7.17.2 Get Retry Operations Detach Disk by Detached Disk 642
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7.17.7 Action Retry Operations Attach Disk by Virtual Machine 652
7.17.8 Action Retry Operations Attach Disk by Detached Disk 653

Advance to *7.18 Network Summary*.

Retry Operation permits retrying a failed operation.

Return to *7 Application Programming Interface Reference Guide*.

7.17.1 Get Retry Operations Detach Disk by Virtual Machine

The Get Retry Operations Detach Disk by Virtual Machine call returns information regarding retrying a failed detach disk operation.

The detach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Get Retry Operations Detach Disk by Detached Disk** for access via the detached disk.

Live Specification Test Values

Condition	Outcome
Virtual Machine identifier = 0	Item Not Found Exception
Virtual Machine identifier = 2	Virtual Machine Power State Exception
Virtual Machine identifier = 3	Other Task In Progress Exception
Virtual Machine identifier = 5	Bad Request Exception: Invalid disk count
Virtual Machine identifier = 7	Conflict Exception: Cannot detach a disk that is in "detach in progress" state
Virtual Machine identifier = 9	Retry Detach
Virtual Machine identifier = 15	Retry Attach
Virtual Machine identifier = 1	Virtual Machine Status of Deployed
Virtual Machine identifier = 10	Virtual Machine Status of Orphaned
Virtual Machine identifier = 5	Virtual Machine Status of CopyInProgress
Virtual Machine identifier = 4	Virtual Machine Status of NotDeployed
Virtual Machine identifier = 3 or 9 or 15	Virtual Machine Status of Task In Progress
virtual machine identifier = 11	Retry operation pending

Request

```
GET http://{Terremark URI}/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/detachDiskRetryOperations/virtualMachines/3
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DetachDiskRetryOperation href="/detachDiskRetryOperations/virtualMachines/{virtual machine
  identifier}" type="application/vnd.tmrk.cloud.detachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">>

  <Links>

    <Link href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
```

```
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>
    </Links>
    <Actions>
      <Action href="/detachDiskRetryOperations/virtualMachines/{virtual machine
       identifier}/action/retry" name="retryOperation"/>
    </Actions>
    <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
     type="application/vnd.tmrk.cloud.detachedDisk"/>
    <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
     type="application/vnd.tmrk.cloud.virtualMachine"/>
  </DetachDiskRetryOperation>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 882
    Content-Type: application/vnd.tmrk.cloud.detachDiskRetryOperation
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 12 Jan 2012 21:46:58 GMT
  <DetachDiskRetryOperation href="/detachDiskRetryOperations/virtualMachines/3"
    type="application/vnd.tmrk.cloud.detachDiskRetryOperation"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/virtualMachines/3" name="Virtual Machine 3"
       type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>
      <Link href="/detachedDisks/3" name="Detached Disk 3"
       type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>
    </Links>
    <Actions>
      <Action href="/detachDiskRetryOperations/virtualMachines/3/action/retry" name="retryOperation"/>
    </Actions>
    <DetachedDisk href="/detachedDisks/3" name="Detached Disk 3"
     type="application/vnd.tmrk.cloud.detachedDisk"/>
    <VirtualMachine href="/virtualMachines/3" name="Virtual Machine 3"
     type="application/vnd.tmrk.cloud.virtualMachine"/>
  </DetachDiskRetryOperation>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.2 Get Retry Operations Detach Disk by Detached Disk

The Get Retry Operations Detach Disk by Detached Disk call returns information regarding retrying a failed detach disk operation.

The detach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Get Retry Operations Detach Disk by Virtual Machine** for access via the virtual machine.

Live Specification Test Values

Condition	Outcome
Detached Disk identifier = 0	Item Not Found Exception
Detached Disk identifier = 1	Available
Detached Disk identifier = 3 or 9	Detach In Progress
Detached Disk identifier = 2 or 15	Attach In Progress
Detached Disk identifier = 5	Delete In Progress

Request

```
GET http://{Terremark URI}/detachDiskRetryOperations/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/detachDiskRetryOperations/detachedDisks/3
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DetachDiskRetryOperation href="/detachDiskRetryOperations/detachedDisks/{detached disk identifier}"
  type="application/vnd.tmrk.cloud.detachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">>

  <Links>

    <Link href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <Actions>

    <Action href="/detachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry"
      name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
    type="application/vnd.tmrk.cloud.detachedDisk"/>
```

```
  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</DetachDiskRetryOperation>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 878
  Content-Type: application/vnd.tmrk.cloud.detachDiskRetryOperation
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 Jan 2012 21:49:09 GMT

<DetachDiskRetryOperation href="/detachDiskRetryOperations/detachedDisks/3"
  type="application/vnd.tmrk.cloud.detachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/virtualMachines/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

    <Link href="/detachedDisks/3" name="Detached Disk 3"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

  </Links>

  <Actions>

    <Action href="/detachDiskRetryOperations/detachedDisks/3/action/retry" name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/3" name="Detached Disk 3"
    type="application/vnd.tmrk.cloud.detachedDisk"/>

  <VirtualMachine href="/virtualMachines/3" name="Virtual Machine 3"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</DetachDiskRetryOperation>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.3 Get Retry Operations Attach Disk by Virtual Machine

The Get Retry Operations Attach Disk by Virtual Machine call returns information regarding retrying a failed attach disk operation.

The attach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Get Retry Operations Attach Disk by Detached Disk** for access via the detached disk.

Live Specification Test Values

Condition	Outcome
Virtual Machine identifier = 0	Item Not Found Exception
Virtual Machine identifier = 2	Virtual Machine Power State Exception

Condition	Outcome
Virtual Machine identifier = 3	Other Task In Progress Exception
Virtual Machine identifier = 5	Bad Request Exception: Invalid disk count
Virtual Machine identifier = 7	Conflict Exception: Cannot detach a disk that is in "detach in progress" state
Virtual Machine identifier = 9	Retry Detach
Virtual Machine identifier = 15	Retry Attach
Virtual Machine identifier = 1	Virtual Machine Status of Deployed
Virtual Machine identifier = 10	Virtual Machine Status of Orphaned
Virtual Machine identifier = 5	Virtual Machine Status of CopyInProgress
Virtual Machine identifier = 4	Virtual Machine Status of NotDeployed
Virtual Machine identifier = 3 or 9 or 15	Virtual Machine Status of Task In Progress
virtual machine identifier = 11	Retry operation pending

Request

```
GET http://{Terremark URI}/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/attachDiskRetryOperations/virtualMachines/15
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AttachDiskRetryOperation href="/attachDiskRetryOperations/virtualMachines/{virtual machine
  identifier}" type="application/vnd.tmrk.cloud.attachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">>

  <Links>

    <Link href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <Actions>

    <Action href="/attachDiskRetryOperations/virtualMachines/{virtual machine
      identifier}/action/retry" name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
```

```
    type="application/vnd.tmrk.cloud.detachedDisk"/>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</AttachDiskRetryOperation>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 891
  Content-Type: application/vnd.tmrk.cloud.attachDiskRetryOperation
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:25:06 GMT

<AttachDiskRetryOperation href="/attachDiskRetryOperations/virtualMachines/15"
  type="application/vnd.tmrk.cloud.attachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/detachedDisks/15" name="Detached Disk 15"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/15" name="Virtual Machine 15"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <Actions>

    <Action href="/attachDiskRetryOperations/virtualMachines/15/action/retry" name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/15" name="Detached Disk 15"
    type="application/vnd.tmrk.cloud.detachedDisk"/>

  <VirtualMachine href="/virtualMachines/15" name="Virtual Machine 15"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</AttachDiskRetryOperation>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.4 Get Retry Operations Attach Disk by Detached Disk

The Get Retry Operations Attach Disk by Detached Disk call returns information regarding retrying a failed attach disk operation.

The attach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Get Retry Operations Attach Disk by Virtual Machine** for access via the virtual machine.

Live Specification Test Values

Condition	Outcome
Detached Disk identifier = 0	Item Not Found Exception
Detached Disk identifier = 1	Available
Detached Disk identifier = 3 or 9	Detach In Progress
Detached Disk identifier = 2 or 15	Attach In Progress
Detached Disk identifier = 5	Delete In Progress

Request

```
GET http://{Terremark URI}/attachDiskRetryOperations/detachedDisks/{detached disk identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/attachDiskRetryOperations/detachedDisks/15
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AttachDiskRetryOperation href="/attachDiskRetryOperations/detachedDisks/{detached disk identifier}"
  type="application/vnd.tmrk.cloud.attachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">>

  <Links>

    <Link href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <Actions>

    <Action href="/attachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry"
      name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/{detached disk identifier}" name="{detached disk name}"
    type="application/vnd.tmrk.cloud.detachedDisk"/>

  <VirtualMachine href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</AttachDiskRetryOperation>
```

EXAMPLE

```
HTTP/1.1 200 OK
```

```
  Content-Length: 891
  Content-Type: application/vnd.tmrk.cloud.attachDiskRetryOperation
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:27:45 GMT

<AttachDiskRetryOperation href="/attachDiskRetryOperations/detachedDisks/15"
  type="application/vnd.tmrk.cloud.attachDiskRetryOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/detachedDisks/15" name="Detached Disk 15"
      type="application/vnd.tmrk.cloud.detachedDisk" rel="up"/>

    <Link href="/virtualMachines/15" name="Virtual Machine 15"
      type="application/vnd.tmrk.cloud.virtualMachine" rel="up"/>

  </Links>

  <Actions>

    <Action href="/attachDiskRetryOperations/detachedDisks/15/action/retry" name="retryOperation"/>

  </Actions>

  <DetachedDisk href="/detachedDisks/15" name="Detached Disk 15"
    type="application/vnd.tmrk.cloud.detachedDisk"/>

  <VirtualMachine href="/virtualMachines/15" name="Virtual Machine 15"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

</AttachDiskRetryOperation>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.5 Action Retry Operations Detach Disk by Virtual Machine

The Action Retry Operations Detach Disk by Virtual Machine call retries detaching a disk from a virtual machine that previously failed. If successful, the call returns a task regarding the disk or disks detached.

The detach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Action Retry Operations Detach Disk by Detached Disk** for access via the detached disk.

Live Specification Test Values

Condition	Outcome
Virtual Machine identifier = 0	Item Not Found Exception
Virtual Machine identifier = 2	Virtual Machine Power State Exception
Virtual Machine identifier = 3	Other Task In Progress Exception
Virtual Machine identifier = 5	Bad Request Exception: Invalid disk count
Virtual Machine identifier = 7	Conflict Exception: Cannot detach a disk that is in "detach in progress" state
Virtual Machine identifier = 9	Retry Detach

Condition	Outcome
Virtual Machine identifier = 15	Retry Attach
Virtual Machine identifier = 1	Virtual Machine Status of Deployed
Virtual Machine identifier = 10	Virtual Machine Status of Orphaned
Virtual Machine identifier = 5	Virtual Machine Status of CopyInProgress
Virtual Machine identifier = 4	Virtual Machine Status of NotDeployed
Virtual Machine identifier = 3 or 9 or 15	Virtual Machine Status of Task In Progress
virtual machine identifier = 11	Retry operation pending

Request

```
POST http://{Terremark URI}/detachDiskRetryOperations/virtualMachines/{virtual machine
  identifier}/action/retry
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/detachDiskRetryOperations/virtualMachines/9/ …
  action/retry
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Detach Virtual Disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
```

```
  Content-Length: 506
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 Jan 2012 21:56:39 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Detach Virtual Disk</Operation>

  <Status>Running</Status>

  <ImpactedItem href="/detachedDisks/9" type="application/vnd.tmrk.cloud.detachedDisk"/>

  <StartTime>2012-01-12T21:56:40.2963652Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.6 Action Retry Operations Detach Disk by Detached Disk

The Action Retry Operations Detach Disk by Detached Disk call retries detaching a disk from a virtual machine that previously failed. If successful, the call returns a task regarding the disk or disks detached.

The detach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Action Retry Operations Detach Disk by Virtual Machine** for access via the virtual machine.

Live Specification Test Values

Condition	Outcome
Detached Disk identifier = 0	Item Not Found Exception
Detached Disk identifier = 1	Available
Detached Disk identifier = 3 or 9	Detach In Progress
Detached Disk identifier = 2 or 15	Attach In Progress
Detached Disk identifier = 5	Delete In Progress

Request

```
POST http://{Terremark URI}/detachDiskRetryOperations/detachedDisks/{detached disk
  identifier}/action/retry
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/detachDiskRetryOperations/detachedDisks/9/ …
  action/retry
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Detach Virtual Disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 506
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 12 Jan 2012 22:00:49 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Detach Virtual Disk</Operation>

  <Status>Running</Status>

  <ImpactedItem href="/detachedDisks/9" type="application/vnd.tmrk.cloud.detachedDisk"/>

  <StartTime>2012-01-12T22:00:50.4417929Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.7 Action Retry Operations Attach Disk by Virtual Machine

The Action Retry Operations Attach Disk by Virtual Machine call retries detaching a disk from a virtual machine that previously failed. If successful, the call returns a task regarding the virtual machine to which disk or disks were attached.

The attach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Action Retry Operations Attach Disk by Detached Disk** for access via the detached disk.

Live Specification Test Values

Condition	Outcome
Virtual Machine identifier = 0	Item Not Found Exception
Virtual Machine identifier = 2	Virtual Machine Power State Exception
Virtual Machine identifier = 3	Other Task In Progress Exception
Virtual Machine identifier = 5	Bad Request Exception: Invalid disk count
Virtual Machine identifier = 7	Conflict Exception: Cannot detach a disk that is in "detach in progress" state
Virtual Machine identifier = 9	Retry Detach
Virtual Machine identifier = 15	Retry Attach
Virtual Machine identifier = 1	Virtual Machine Status of Deployed
Virtual Machine identifier = 10	Virtual Machine Status of Orphaned
Virtual Machine identifier = 5	Virtual Machine Status of CopyInProgress
Virtual Machine identifier = 4	Virtual Machine Status of NotDeployed
Virtual Machine identifier = 3 or 9 or 15	Virtual Machine Status of Task In Progress
virtual machine identifier = 11	Retry operation pending

Request

```
POST http://{Terremark URI}/attachDiskRetryOperations/virtualMachines/{virtual machine
  identifier}/action/retry
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/attachDiskRetryOperations/virtualMachines/15/ …
  action/retry
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Retry attach disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:35:24 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Retry attach disk</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/catalogItem/3" type="application/vnd.tmrk.cloud.catalogItem"/>

  <StartTime>2012-01-13T22:35:24.4442612Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.17.8 Action Retry Operations Attach Disk by Detached Disk

The Action Retry Operations Attach Disk by Detached Disk call retries detaching a disk from a virtual machine that previously failed. If successful, the call returns a task regarding the virtual machine to which disk or disks were attached.

The attach disk operation affects two entities: the virtual machine and the detached disk. The Retry Operation may be accessed through either affected entity. See **Action Retry Operations Attach Disk by Virtual Machine** for access via the virtual machine.

Live Specification Test Values

Condition	Outcome
Detached Disk identifier = 0	Item Not Found Exception
Detached Disk identifier = 1	Available
Detached Disk identifier = 3 or 9	Detach In Progress
Detached Disk identifier = 2 or 15	Attach In Progress
Detached Disk identifier = 5	Delete In Progress

Request

```
POST http://{Terremark URI}/attachDiskRetryOperations/detachedDisks/{detached disk
  identifier}/action/retry
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/attachDiskRetryOperations/detachedDisks/15/ …
  action/retry
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Retry attach disk</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>
```

```
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:37:31 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Retry attach disk</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/catalogItem/3" type="application/vnd.tmrk.cloud.catalogItem"/>

  <StartTime>2012-01-13T22:37:31.3685731Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.17 Retry Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.18 Network Summary

7.18.1 Get Network Summary 655

Advance to *7.19 Network*.

This section contains the calls for the Network Detail entity.

Return to *7 Application Programming Interface Reference Guide*.

7.18.1 Get Network Summary

The Get Network Summary call returns summary information regarding networks in an environment.

The <Link> with a `type` of `firewallLog` is not present if firewall logging is disabled, that is, no server is defined to which to send firewall log entries.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<Status> refers to the status of the host. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

<IpType> permitted values are:

- **defaultRnat** – defined as the default endpoint of a Reverse Network Address Translation
- **rnat** – defined as the endpoint of a Reverse Network Address Translation
- **none** – not currently in use.

Live Specification Test Values

Condition	Outcome
network identifier = 1 or> 2	/27 subnetwork
network identifier = 2	/28 subnetwork

Request

```
GET http://{Terremark URI}/networkSummary/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/networkSummary/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.environmentNetworkDetails
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<EnvironmentNetworkSummary href="/networkSummary/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.environmentNetworkSummary"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/networks/environments/{environment identifier}"
      type="application/vnd.tmrk.cloud.network; type=collection" rel="down"/>
```

```
    <Link href="/networkHosts/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.networkHostSummary" rel="down"/>

    <Link href="/backupInternetServices/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.backupInternetService; type=collection" rel="down"/>

    <Link href="/publicIps/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.publicIp; type=collection" rel="down"/>

    <Link href="/rnats/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.rnatConfiguration" rel="down"/>

    <Link href="/firewallAcls/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.firewallAcl; type=collection" rel="down"/>

    <Link href="/firewallLogs/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.firewallLog" rel="down"/> <!-- Not present when not logging -->

    <Link href="/trustedNetworkGroups/environments/{environment identifier}"
     type="application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/publicIps/environments/{environment identifier}/action/activatePublicIp"
     name="activatePublicIp"/>

    <Action href="/backupInternetServices/environments/{environment
     identifier}/action/createBackupInternetService" name="createBackupInternetService"
     type="application/vnd.tmrk.cloud.createBackupInternetService"/>

    <Action href="/rnats/environments/{environment identifier}/action/createAssociation"
     name="createRnatAssociation" type="application/vnd.tmrk.cloud.createRnatAssociation"/>

    <Action href="/firewallAcls/environments/{environment identifier}/action/createFirewallAcl"
     name="createFirewallAcl" type="application/vnd.tmrk.cloud.createFirewallAcl"/>

    <Action href="/firewallLogs/environments/{environment identifier}/action/createFirewallLog"
     name="createFirewallLog" type="application/vnd.tmrk.cloud.firewallLog"/>

    <Action href="/trustedNetworkGroups/environments/{environment
     identifier}/action/createTrustedNetworkGroup" name="createTrustedNetworkGroup"
     type="application/vnd.tmrk.cloud.createTrustedNetworkGroup"/>

  </Actions>

  <Networks href="/networkHosts/environments/{environment identifier}"
   type="application/vnd.tmrk.cloud.networkHostSummary">

    <Links>

      <Link href="/environments/{environment identifier}" name="{environment name}"
       type="application/vnd.tmrk.cloud.environment" rel="up"/>

    </Links>

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
     type="application/vnd.tmrk.cloud.network">

      <NetworkType>{Dmz | Internal}</NetworkType>

      <Hosts>

        <Host href="/networkHosts/{network host identifier}" name="{network host name}"
         type="application/vnd.tmrk.cloud.networkHost">

          <IpAddresses>
```

```
        <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host
          IP address}" type="application/vnd.tmrk.cloud.ipAddress"/>
          ⋮
      </IpAddresses>
      <PoweredOn>{true | false}</PoweredOn>
      <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
    </Host>
      ⋮
  </Hosts>
</Network>
  ⋮
</Networks>
<PublicIpAddresses href="/publicIps/environments/{environment identifier}"
 type="application/vnd.tmrk.cloud.publicIp; type=collection">
 <Links>
  <Link href="/environments/{environment identifier}" name="{environment name}"
   type="application/vnd.tmrk.cloud.environment" rel="up"/>
 </Links>
 <PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
  type="application/vnd.tmrk.cloud.publicIp">
  <IpType>{defaultRnat | rnat | none}</IpType>
 </PublicIp>
  ⋮
 <Remaining>{number of unused public IP addresses purchased}</Remaining>
</PublicIpAddresses>
<InternetServices>
 <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
  name}" type="application/vnd.tmrk.cloud.internetService"/>
  ⋮
</InternetServices>
<NodeServices>
 <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
  type="application/vnd.tmrk.cloud.nodeService"/>
  ⋮
</NodeServices>
<FirewallAcls>
 <Reference href="/firewallAcls/{firewall rule identifier}"
  type="application/vnd.tmrk.cloud.firewallAcl"/>
  ⋮
```

```
    </FirewallAcls>

    <TrustedNetworkGroups>

      <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
        name="{trusted network group identifier}"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

        ⋮

    </TrustedNetworkGroups>

  </EnvironmentNetworkSummary>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 4966
    Content-Type: application/vnd.tmrk.cloud.environmentNetworkDetails
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 01 Nov 2011 20:32:14 GMT

  <EnvironmentNetworkSummary href="/networkSummary/environments/1"
    type="application/vnd.tmrk.cloud.environmentNetworkSummary"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>

      <Link href="/networks/environments/1" type="application/vnd.tmrk.cloud.network; type=collection"
        rel="down"/>

      <Link href="/networkHosts/environments/1" type="application/vnd.tmrk.cloud.networkHostSummary"
        rel="down"/>

      <Link href="/backupInternetServices/environments/1"
        type="application/vnd.tmrk.cloud.backupInternetService; type=collection" rel="down"/>

      <Link href="/publicIps/environments/1" type="application/vnd.tmrk.cloud.publicIp; type=collection"
        rel="down"/>

      <Link href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration"
        rel="down"/>

      <Link href="/firewallAcls/environments/1" type="application/vnd.tmrk.cloud.firewallAcl;
        type=collection" rel="down"/>

      <Link href="/firewallLogs/environments/1" type="application/vnd.tmrk.cloud.firewallLog"
        rel="down"/>

      <Link href="/trustedNetworkGroups/environments/1"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection" rel="down"/>

    </Links>

    <Actions>

      <Action href="/publicIps/environments/1/action/activatePublicIp" name="activatePublicIp"/>

      <Action href="/backupInternetServices/environments/1/action/createBackupInternetService"
        name="createBackupInternetService"
        type="application/vnd.tmrk.cloud.createBackupInternetService"/>

      <Action href="/rnats/environments/1/action/createAssociation" name="createRnatAssociation"
```

```
    type="application/vnd.tmrk.cloud.createRnatAssociation"/>
  <Action href="/firewallAcls/environments/1/action/createFirewallAcl" name="createFirewallAcl"
    type="application/vnd.tmrk.cloud.createFirewallAcl"/>
  <Action href="/firewallLogs/environments/1/action/createFirewallLog" name="createFirewallLog"
    type="application/vnd.tmrk.cloud.firewallLog"/>
  <Action href="/trustedNetworkGroups/environments/1/action/createTrustedNetworkGroup"
    name="createTrustedNetworkGroup" type="application/vnd.tmrk.cloud.createTrustedNetworkGroup"/>
</Actions>
<Networks href="/networkHosts/environments/1" type="application/vnd.tmrk.cloud.networkHostSummary">
  <Links>
    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Network href="/networks/1" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
    <Hosts>
      <Host href="/networkHosts/1" name="Device 1" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
        <PoweredOn>true</PoweredOn>
        <Status>Deployed</Status>
      </Host>
      <Host href="/networkHosts/2" name="Device 2" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
      </Host>
      <Host href="/networkHosts/3" name="Device 3" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
```

```
      </Host>
    </Hosts>
  </Network>
  <Network href="/networks/2" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
  </Network>
  <Network href="/networks/3" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
    <Hosts>
      <Host href="/networkHosts/1" name="Device 1" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
        <PoweredOn>true</PoweredOn>
        <Status>Deployed</Status>
      </Host>
      <Host href="/networkHosts/2" name="Device 2" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
      </Host>
      <Host href="/networkHosts/3" name="Device 3" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
      </Host>
    </Hosts>
  </Network>
</Networks>
<PublicIpAddresses href="/publicIps/environments/1" type="application/vnd.tmrk.cloud.publicIp;
```

```
      type=collection">
      <Links>
        <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      </Links>
      <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp">
        <IpType>defaultRnat</IpType>
      </PublicIp>
      <PublicIp href="/publicIps/2" name="72.46.234.14" type="application/vnd.tmrk.cloud.publicIp">
        <IpType>rnat</IpType>
      </PublicIp>
      <PublicIp href="/publicIps/3" name="72.46.234.55" type="application/vnd.tmrk.cloud.publicIp">
        <IpType>none</IpType>
      </PublicIp>
      <Remaining>3</Remaining>
    </PublicIpAddresses>
    <InternetServices>
      <InternetService href="/internetServices/1" name="My Internet Service"
        type="application/vnd.tmrk.cloud.internetService"/>
      <InternetService href="/internetServices/2" name="Another Internet Service"
        type="application/vnd.tmrk.cloud.internetService"/>
    </InternetServices>
    <NodeServices>
      <NodeService href="/nodeServices/1" name="Node 1" type="application/vnd.tmrk.cloud.nodeService"/>
      <NodeService href="/nodeServices/2" name="Node 2" type="application/vnd.tmrk.cloud.nodeService"/>
    </NodeServices>
    <FirewallAcls>
      <Reference href="/firewallAcls/1" type="application/vnd.tmrk.cloud.firewallAcl"/>
      <Reference href="/firewallAcls/2" type="application/vnd.tmrk.cloud.firewallAcl"/>
      <Reference href="/firewallAcls/3" type="application/vnd.tmrk.cloud.firewallAcl"/>
      <Reference href="/firewallAcls/4" type="application/vnd.tmrk.cloud.firewallAcl"/>
      <Reference href="/firewallAcls/5" type="application/vnd.tmrk.cloud.firewallAcl"/>
    </FirewallAcls>
    <TrustedNetworkGroups>
      <TrustedNetworkGroup href="/trustedNetworkGroups/1" name="Trusted Network Group 1"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    </TrustedNetworkGroups>
  </EnvironmentNetworkSummary>
```


Return to *7.18 Network Summary*.

Return to *7 Application Programming Interface Reference Guide*.

7.19 Network

7.19.1 Get Networks 663

7.19.2 Get Networks by ID 664

Advance to *7.20 Network Host*.

This section contains the calls for the Network entity.

Return to *7 Application Programming Interface Reference Guide*.

7.19.1 Get Networks

The Get Networks call returns information regarding networks in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
network identifier = 1 or> 2	/27 subnetwork
network identifier = 2	/28 subnetwork

Request

```
GET http://{Terremark URI}/networks/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/networks/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.network; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

```
<Networks href="/networks/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.network; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
    type="application/vnd.tmrk.cloud.network">

    <NetworkType>{Dmz | Internal}</NetworkType>

  </Network>

    ⋮

</Networks>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 530
  Content-Type: application/vnd.tmrk.cloud.network; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 25 May 2011 21:38:41 GMT

<Networks href="/networks/environments/1" type="application/vnd.tmrk.cloud.network; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">

    <NetworkType>Dmz</NetworkType>

  </Network>

  <Network href="/networks/2" name="10.67.2.64/28" type="application/vnd.tmrk.cloud.network">

    <NetworkType>Internal</NetworkType>

  </Network>

</Networks>
```

Return to *7.19 Network*.

Return to *7 Application Programming Interface Reference Guide*.

7.19.2 Get Networks by ID

The Get Networks by ID call returns information regarding the usage of all IP addresses on a specified network defined in an environment.

An <IpAddress> element with no subordinate elements is not assigned, not configured on a host, and not associated to a reverse network address translation. An <IpAddress> element may have more than one subordinate element, which appear under the following circumstances:

- <Actions> appears for IP addresses configured on a host but not assigned to that host.
- <Hosts> appears for IP addresses assigned to a host.
- <DetectedOn> appears for IP addresses configured on a host but not assigned to that host.
- <RnatAddress> appears for IP addresses associated to a reverse network address translation.

<Actions … name="sync"> is enabled for IP addresses configured on a host but not assigned to that host.

Live Specification Test Values

Condition	Outcome
network identifier = 1 or> 2	/27 subnetwork
network identifier = 2	/28 subnetwork

Request

```
GET http://{Terremark URI}/networks/{network identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/networks/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.network
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
  type="application/vnd.tmrk.cloud.network" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/ipAddresses/networks/{network identifier}/action/configureIpReservation"
      name="configureIpReservation"/>

  </Actions>
```

```
    <Address>{network address}</Address>

    <NetworkType>{Dmz | Internal}</NetworkType>

    <BroadcastAddress>{network broadcast address}</BroadcastAddress>

    <GatewayAddress>{network gateway address}</GatewayAddress>

    <RnatAddress>{public IP to which RNAT points}</RnatAddress>

    <IpAddresses>

      <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
        address}" type="application/vnd.tmrk.cloud.ipAddress">

        <Actions>

          <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/reserve"
            name="reserve" actionDisabled="{noAccess | disabled}"/>

          <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/unreserve"
            name="unreserve" actionDisabled="{noAccess | disabled}"/>

          <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/sync"
            name="sync" actionDisabled="{noAccess | disabled}"/>

        </Actions>

        <!-- <Hosts> appears for IP addresses assigned to a host -->

        <Host href="/networkHosts/{network host identifier}" name="{network host name}"
          type="application/vnd.tmrk.cloud.networkHost"/>

        <!-- <DetectedOn> appears for IP addresses configured on a host but not assigned -->

        <DetectedOn href="/networkHosts/{different network host identifier}" name="{different network
          host name}" type="application/vnd.tmrk.cloud.networkHost"/>

        <!-- <RnatAddress> appears for IP addresses associated to an RNAT -->

        <RnatAddress href="/rnats/associations/{association identifier}"
          type="application/vnd.tmrk.cloud.rnatAssociation"/>

        <Reserved>{true | false}</Reserved>

      </IpAddress>

        ⋮

    </IpAddresses>

  </Network>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 21908
    Content-Type: application/vnd.tmrk.cloud.network
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 13 Oct 2011 22:04:20 GMT

  <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
```

```
    rel="up"/>
  </Links>
  <Actions>
    <Action href="/ipAddresses/networks/1/action/configureIpReservation"
      name="configureIpReservation"/>
  </Actions>
  <Address>10.0.4.32</Address>
  <NetworkType>Dmz</NetworkType>
  <BroadcastAddress>10.0.4.63</BroadcastAddress>
  <GatewayAddress>10.0.4.33</GatewayAddress>
  <RnatAddress href="/rnats/networks/1" name="10.0.4.32/27"
    type="application/vnd.tmrk.cloud.networkRnat"/>
  <IpAddresses>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.33/action/reserve" name="reserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.33/action/unreserve" name="unreserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.33/action/sync" name="sync"
          actionDisabled="disabled"/>
      </Actions>
      <Host href="/networkHosts/1" name="Virtual Machine 1"
        type="application/vnd.tmrk.cloud.networkHost"/>
      <Reserved>true</Reserved>
    </IpAddress>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.34" name="10.0.4.34"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.34/action/reserve" name="reserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.34/action/unreserve" name="unreserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.34/action/sync" name="sync"
          actionDisabled="disabled"/>
```

```
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.35" name="10.0.4.35"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.35/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.35/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.35/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <RnatAddress href="/rnats/associations/35" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.36" name="10.0.4.36"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.36/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.36/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.36/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/2" name="Virtual Machine 2"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <DetectedOn href="/networkHosts/2" name="Virtual Machine 2"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
```

```
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.37/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.37/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.37/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.38" name="10.0.4.38"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.38/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.38/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.38/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.39/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.39/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.39/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.40" name="10.0.4.40"
```

```
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.40/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.40/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.40/action/sync" name="sync"/>
    </Actions>
    <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <RnatAddress href="/rnats/associations/40" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.41" name="10.0.4.41"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.41/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.41/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.41/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.42" name="10.0.4.42"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.42/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.42/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.42/action/sync" name="sync"
        actionDisabled="disabled"/>
```

```
      </Actions>
      <Host href="/networkHosts/1" name="Virtual Machine 1"
        type="application/vnd.tmrk.cloud.networkHost"/>
      <Reserved>true</Reserved>
    </IpAddress>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.43" name="10.0.4.43"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.43/action/reserve" name="reserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.43/action/unreserve" name="unreserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.43/action/sync" name="sync"
          actionDisabled="disabled"/>
      </Actions>
      <Reserved>true</Reserved>
    </IpAddress>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.44" name="10.0.4.44"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.44/action/reserve" name="reserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.44/action/unreserve" name="unreserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.44/action/sync" name="sync"/>
      </Actions>
      <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
        type="application/vnd.tmrk.cloud.networkHost"/>
      <Reserved>false</Reserved>
    </IpAddress>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.45" name="10.0.4.45"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
```

```
      <Action href="/ipAddresses/networks/1/10.0.4.45/action/reserve" name="reserve"/>

      <Action href="/ipAddresses/networks/1/10.0.4.45/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>

      <Action href="/ipAddresses/networks/1/10.0.4.45/action/sync" name="sync"
        actionDisabled="disabled"/>

    </Actions>

    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>

    <RnatAddress href="/rnats/associations/45" type="application/vnd.tmrk.cloud.rnatAssociation"/>

    <Reserved>false</Reserved>

  </IpAddress>

  <IpAddress href="/ipAddresses/networks/1/10.0.4.46" name="10.0.4.46"
    type="application/vnd.tmrk.cloud.ipAddress">

    <Links>

      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>

    </Links>

    <Actions>

      <Action href="/ipAddresses/networks/1/10.0.4.46/action/reserve" name="reserve"
        actionDisabled="disabled"/>

      <Action href="/ipAddresses/networks/1/10.0.4.46/action/unreserve" name="unreserve"/>

      <Action href="/ipAddresses/networks/1/10.0.4.46/action/sync" name="sync"
        actionDisabled="disabled"/>

    </Actions>

    <Reserved>true</Reserved>

  </IpAddress>

  <IpAddress href="/ipAddresses/networks/1/10.0.4.47" name="10.0.4.47"
    type="application/vnd.tmrk.cloud.ipAddress">

    <Links>

      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>

    </Links>

    <Actions>

      <Action href="/ipAddresses/networks/1/10.0.4.47/action/reserve" name="reserve"
        actionDisabled="disabled"/>

      <Action href="/ipAddresses/networks/1/10.0.4.47/action/unreserve" name="unreserve"/>

      <Action href="/ipAddresses/networks/1/10.0.4.47/action/sync" name="sync"
        actionDisabled="disabled"/>

    </Actions>

    <Reserved>true</Reserved>

  </IpAddress>

  <IpAddress href="/ipAddresses/networks/1/10.0.4.48" name="10.0.4.48"
    type="application/vnd.tmrk.cloud.ipAddress">
```

```
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.48/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.48/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.48/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.49" name="10.0.4.49"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.49/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.49/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.49/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.50" name="10.0.4.50"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.50/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.50/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.50/action/sync" name="sync"
        actionDisabled="disabled"/>
```

```
    </Actions>
    <RnatAddress href="/rnats/associations/50" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.51" name="10.0.4.51"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.51/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.51/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.51/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.52" name="10.0.4.52"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.52/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.52/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.52/action/sync" name="sync"/>
    </Actions>
    <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.53" name="10.0.4.53"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
```

```
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.53/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.53/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.53/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.54" name="10.0.4.54"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.54/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.54/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.54/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.55" name="10.0.4.55"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.55/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.55/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.55/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <RnatAddress href="/rnats/associations/55" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.56" name="10.0.4.56"
```

```
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.56/action/reserve" name="reserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.56/action/unreserve" name="unreserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.56/action/sync" name="sync"/>
    </Actions>
    <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.57" name="10.0.4.57"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.57/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.57/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.57/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.58" name="10.0.4.58"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.58/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.58/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.58/action/sync" name="sync"
```

```
      actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.59" name="10.0.4.59"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
      <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
      <Action href="/ipAddresses/networks/1/10.0.4.59/action/reserve" name="reserve"
        actionDisabled="disabled"/>
      <Action href="/ipAddresses/networks/1/10.0.4.59/action/unreserve" name="unreserve"/>
      <Action href="/ipAddresses/networks/1/10.0.4.59/action/sync" name="sync"
        actionDisabled="disabled"/>
    </Actions>
    <Reserved>true</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.60" name="10.0.4.60"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
    <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
    </Links>
    <Actions>
    <Action href="/ipAddresses/networks/1/10.0.4.60/action/reserve" name="reserve"/>
    <Action href="/ipAddresses/networks/1/10.0.4.60/action/unreserve" name="unreserve"
      actionDisabled="disabled"/>
    <Action href="/ipAddresses/networks/1/10.0.4.60/action/sync" name="sync"
      actionDisabled="disabled"/>
    </Actions>
    <Host href="/networkHosts/1" name="Virtual Machine 1"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
      type="application/vnd.tmrk.cloud.networkHost"/>
    <RnatAddress href="/rnats/associations/60" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.61" name="10.0.4.61"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Links>
```

```
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.61/action/reserve" name="reserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.61/action/unreserve" name="unreserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.61/action/sync" name="sync"
          actionDisabled="disabled"/>
      </Actions>
      <Reserved>true</Reserved>
    </IpAddress>
    <IpAddress href="/ipAddresses/networks/1/10.0.4.62" name="10.0.4.62"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Links>
        <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>
      </Links>
      <Actions>
        <Action href="/ipAddresses/networks/1/10.0.4.62/action/reserve" name="reserve"
          actionDisabled="disabled"/>
        <Action href="/ipAddresses/networks/1/10.0.4.62/action/unreserve" name="unreserve"/>
        <Action href="/ipAddresses/networks/1/10.0.4.62/action/sync" name="sync"
          actionDisabled="disabled"/>
      </Actions>
      <Reserved>true</Reserved>
    </IpAddress>
  </IpAddresses>
</Network>
```

Return to *7.19 Network*.

Return to *7 Application Programming Interface Reference Guide*.

7.20 Network Host

7.20.1 Get Network Hosts 679

7.20.2 Get Network Hosts by ID 682

Advance to *7.21 Trusted Network Group*.

Network hosts are the virtual machines and physical devices attached to a network.

Return to *7 Application Programming Interface Reference Guide*.

7.20.1 Get Network Hosts

The Get Network Hosts call returns information regarding the network hosts, virtual machines or physical devices, on the networks in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<Status> refers to the status of the host. Permitted values are:

- **NotDeployed** – host has been defined but not deployed.
- **Deployed** – host is defined and deployed; available for service.
- **Orphaned** – an attempt was made to create the host but failed.
- **TaskInProgress** – the host has been defined and creation is in progress.
- **CopyInProgress** – the host is to be a copy of an existing host and the copy is in progress.

Request

```
GET http://{Terremark URI}/networkHosts/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/networkHosts/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.networkHostSummary
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<NetworkHostSummary href="/networkHosts/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.networkHostSummary" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
    type="application/vnd.tmrk.cloud.network">
```

```
    <NetworkType>{Dmz | Internal}</NetworkType>
    <Hosts>
      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
            address}" type="application/vnd.tmrk.cloud.ipAddress"/>
            ⋮
        </IpAddresses>
        <PoweredOn>{true | false}</PoweredOn>
        <Status>{NotDeployed | Deployed | Orphaned | TaskInProgress | CopyInProgress}</Status>
      </Host>
        ⋮
    </Hosts>
  </Network>
    ⋮
</NetworkHostSummary>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2936
  Content-Type: application/vnd.tmrk.cloud.networkHostSummary
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 25 May 2011 19:04:59 GMT

<NetworkHostSummary href="/networkHosts/environments/1"
  type="application/vnd.tmrk.cloud.networkHostSummary" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Network href="/networks/1" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Dmz</NetworkType>
    <Hosts>
      <Host href="/networkHosts/1" name="Device 1" type="application/vnd.tmrk.cloud.networkHost">
        <IpAddresses>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
            type="application/vnd.tmrk.cloud.ipAddress"/>
          <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
            type="application/vnd.tmrk.cloud.ipAddress"/>
        </IpAddresses>
```

```
      <PoweredOn>true</PoweredOn>
      <Status>Deployed</Status>
    </Host>
    <Host href="/networkHosts/2" name="Device 2" type="application/vnd.tmrk.cloud.networkHost">
      <IpAddresses>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
          type="application/vnd.tmrk.cloud.ipAddress"/>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
          type="application/vnd.tmrk.cloud.ipAddress"/>
      </IpAddresses>
    </Host>
    <Host href="/networkHosts/3" name="Device 3" type="application/vnd.tmrk.cloud.networkHost">
      <IpAddresses>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
          type="application/vnd.tmrk.cloud.ipAddress"/>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
          type="application/vnd.tmrk.cloud.ipAddress"/>
      </IpAddresses>
    </Host>
  </Hosts>
</Network>
<Network href="/networks/2" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
  <NetworkType>Dmz</NetworkType>
</Network>
<Network href="/networks/3" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network">
  <NetworkType>Dmz</NetworkType>
  <Hosts>
    <Host href="/networkHosts/1" name="Device 1" type="application/vnd.tmrk.cloud.networkHost">
      <IpAddresses>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
          type="application/vnd.tmrk.cloud.ipAddress"/>
        <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
          type="application/vnd.tmrk.cloud.ipAddress"/>
      </IpAddresses>
      <PoweredOn>true</PoweredOn>
      <Status>Deployed</Status>
    </Host>
    <Host href="/networkHosts/2" name="Device 2" type="application/vnd.tmrk.cloud.networkHost">
      <IpAddresses>
```

```
        <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
          type="application/vnd.tmrk.cloud.ipAddress"/>

        <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
          type="application/vnd.tmrk.cloud.ipAddress"/>

      </IpAddresses>

    </Host>

    <Host href="/networkHosts/3" name="Device 3" type="application/vnd.tmrk.cloud.networkHost">

      <IpAddresses>

        <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37"
          type="application/vnd.tmrk.cloud.ipAddress"/>

        <IpAddress href="/ipAddresses/networks/1/10.0.4.39" name="10.0.4.39"
          type="application/vnd.tmrk.cloud.ipAddress"/>

      </IpAddresses>

    </Host>

  </Hosts>

 </Network>

</NetworkHostSummary>
```

Return to *7.19 Network*.

Return to *7 Application Programming Interface Reference Guide*.

7.20.2 Get Network Hosts by ID

The Get Network Hosts by ID call returns information regarding a specified network host defined in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Request

```
GET http://{Terremark URI}/networkHosts/{network host identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/networkHosts/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.networkHost
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<NetworkHost href="/networkHosts/{network host identifier}" name="{network host name}"
  type="application/vnd.tmrk.cloud.networkHost" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Device href="/virtualMachines/{virtual machine identifier}" name="{virtual machine name}"
    type="application/vnd.tmrk.cloud.virtualMachine"/>

  <Networks>

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">

      <NetworkType>{Dmz | Internal}</NetworkType>

      <IpAddresses>

        <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
          address}" type="application/vnd.tmrk.cloud.ipAddress">

          <NodeServices>

            <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
              type="application/vnd.tmrk.cloud.nodeService">

              <Links>

                <Link href="/internetServices/{Internet service identifier}" name="{Internet service
                  name}" type="application/vnd.tmrk.cloud.internetService" rel="up"/>

              </Links>

              <Actions>

                <Action href="/nodeServices/{node service identifier}" name="edit"
                  type="application/vnd.tmrk.cloud.nodeService"/>

                <Action href="/nodeServices/{node service identifier}" name="remove"/>

              </Actions>

              <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host
```

```
            IP address}" type="application/vnd.tmrk.cloud.ipAddress">
            <Network href="/networks/{network identifier}" name="{network address}/{network prefix
              length}" type="application/vnd.tmrk.cloud.network"/>
            <Host href="/networkHosts/{network host identifier}" name="{network host name}"
              type="application/vnd.tmrk.cloud.networkHost"/>
          </IpAddress>
          <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
          <Port>{port number of service, range of 1 to 65535}</Port>
          <Enabled>{true | false}</Enabled>
          <Description>{textual description}</Description>
        </NodeService>
          ⋮
      </NodeServices>
      <Rnat href="/rnats/associations/{association identifier}" name="{public IP to which RNAT
        points}" type="application/vnd.tmrk.cloud.rnatAssociation"/>
    </IpAddress>
      ⋮
  </IpAddresses>
</Network>
  ⋮
</Networks>
</NetworkHost>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 4529
  Content-Type: application/vnd.tmrk.cloud.networkHost
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 01 Jun 2011 19:50:32 GMT
<NetworkHost href="/networkHosts/1" name="Virtual Machine 1"
  type="application/vnd.tmrk.cloud.networkHost" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Device href="/virtualMachines/1" name="Virtual Machine 1"
    type="application/vnd.tmrk.cloud.virtualMachine"/>
  <Networks>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
```

```
<IpAddresses>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.51" name="10.0.4.51"
    type="application/vnd.tmrk.cloud.ipAddress">
    <NodeServices>
      <NodeService href="/nodeServices/1" name="Node Service 1"
        type="application/vnd.tmrk.cloud.nodeService">
        <Links>
          <Link href="/internetServices/5" name="Internet Service 5"
            type="application/vnd.tmrk.cloud.internetService" rel="up"/>
        </Links>
        <Actions>
          <Action href="/nodeServices/1" name="edit"
            type="application/vnd.tmrk.cloud.nodeService"/>
          <Action href="/nodeServices/1" name="remove"/>
        </Actions>
        <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
          type="application/vnd.tmrk.cloud.ipAddress">
          <Network href="/networks/4" name="10.122.145.64/27"
            type="application/vnd.tmrk.cloud.network"/>
          <Host href="/networkHosts/12" name="WebServer1"
            type="application/vnd.tmrk.cloud.networkHost"/>
        </IpAddress>
        <Protocol>HTTP</Protocol>
        <Port>80</Port>
        <Enabled>true</Enabled>
        <Description>This is a node service.</Description>
      </NodeService>
      <NodeService href="/nodeServices/2" name="Node Service 2"
        type="application/vnd.tmrk.cloud.nodeService">
        <Links>
          <Link href="/internetServices/5" name="Internet Service 5"
            type="application/vnd.tmrk.cloud.internetService" rel="up"/>
        </Links>
        <Actions>
          <Action href="/nodeServices/2" name="edit"
            type="application/vnd.tmrk.cloud.nodeService"/>
          <Action href="/nodeServices/2" name="remove"/>
        </Actions>
        <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
          type="application/vnd.tmrk.cloud.ipAddress">
          <Network href="/networks/4" name="10.122.145.64/27"
```

```
          type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/12" name="WebServer1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

      <Protocol>HTTP</Protocol>

      <Port>80</Port>

      <Enabled>true</Enabled>

      <Description>This is a node service.</Description>

    </NodeService>

  </NodeServices>

  <Rnat href="/rnats/associations/14" name="72.46.248.44"
    type="application/vnd.tmrk.cloud.rnatAssociation"/>

</IpAddress>

<IpAddress href="/ipAddresses/networks/1/10.0.4.55" name="10.0.4.55"
  type="application/vnd.tmrk.cloud.ipAddress">

  <NodeServices>

    <NodeService href="/nodeServices/1" name="Node Service 1"
      type="application/vnd.tmrk.cloud.nodeService">

      <Links>

        <Link href="/internetServices/5" name="Internet Service 5"
          type="application/vnd.tmrk.cloud.internetService" rel="up"/>

      </Links>

      <Actions>

        <Action href="/nodeServices/1" name="edit"
          type="application/vnd.tmrk.cloud.nodeService"/>

        <Action href="/nodeServices/1" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">

        <Network href="/networks/4" name="10.122.145.64/27"
          type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/12" name="WebServer1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

      <Protocol>HTTP</Protocol>

      <Port>80</Port>

      <Enabled>true</Enabled>

      <Description>This is a node service.</Description>

    </NodeService>

    <NodeService href="/nodeServices/2" name="Node Service 2"
      type="application/vnd.tmrk.cloud.nodeService">
```

```
            <Links>
              <Link href="/internetServices/5" name="Internet Service 5"
                type="application/vnd.tmrk.cloud.internetService" rel="up"/>
            </Links>
            <Actions>
              <Action href="/nodeServices/2" name="edit"
                type="application/vnd.tmrk.cloud.nodeService"/>
              <Action href="/nodeServices/2" name="remove"/>
            </Actions>
            <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
              type="application/vnd.tmrk.cloud.ipAddress">
              <Network href="/networks/4" name="10.122.145.64/27"
                type="application/vnd.tmrk.cloud.network"/>
              <Host href="/networkHosts/12" name="WebServer1"
                type="application/vnd.tmrk.cloud.networkHost"/>
            </IpAddress>
            <Protocol>HTTP</Protocol>
            <Port>80</Port>
            <Enabled>true</Enabled>
            <Description>This is a node service.</Description>
          </NodeService>
        </NodeServices>
      </IpAddress>
    </IpAddresses>
  </Network>
  <Network href="/networks/8" name="10.54.17.64/28" type="application/vnd.tmrk.cloud.network">
    <NetworkType>Internal</NetworkType>
    <IpAddresses>
      <IpAddress href="/ipAddresses/networks/2/10.54.17.67" name="10.54.17.67"
        type="application/vnd.tmrk.cloud.ipAddress"/>
    </IpAddresses>
  </Network>
</Networks>
</NetworkHost>
```


Return to *7.19 Network*.

Return to *7 Application Programming Interface Reference Guide*.

7.21 Trusted Network Group

7.21.1 Get Trusted Network Groups 688

7.21.2 Get Trusted Network Groups by ID 692
7.21.3 Action Trusted Network Groups Create 694
7.21.4 Action Trusted Network Groups Edit 698
7.21.5 Action Trusted Network Groups Remove 700

Advance to *7.22 Public IP*.

This section contains the calls for the Trusted Network Group entity.

Return to *7 Application Programming Interface Reference Guide*.

7.21.1 Get Trusted Network Groups

The Get Trusted Network Groups call returns information regarding trusted network groups defined in an environment.

A <TrustedNetworkGroup … > element with no <InternetServices> subordinate element indicates that the trusted network group has been defined but not yet bound to an Internet service.

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
trusted network group identifier = 99	Error: no access to trusted network groups

Request

```
GET http://{Terremark URI}/trustedNetworkGroups/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/trustedNetworkGroups/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<TrustedNetworkGroups href="/trustedNetworkGroups/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>
```

```
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/trustedNetworkGroups/environments/{environment
      identifier}/action/createTrustedNetworkGroup" name="createTrustedNetworkGroup"
      type="application/vnd.tmrk.cloud.createTrustedNetworkGroup"/>

  </Actions>

  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
    network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup">

    <Links>

      <Link href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" rel="up"/>

    </Links>

    <Actions>

      <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="edit"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

      <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="remove"/>

    </Actions>

    <Hosts>

      <IpAddress>{host IP address}</IpAddress>

        ⋮

    </Hosts>

    <Networks>

      <Network>

        <Address>{network address}</Address>

        <Size>{network prefix length}</Size>

      </Network>

        ⋮

    </Networks>

    <InternetServices> <!-- empty on TNGs defined but not yet bound to an Internet service -->

      <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
        name}" type="application/vnd.tmrk.cloud.internetService"/>

        ⋮

    </InternetServices>

  </TrustedNetworkGroup>

    ⋮

</TrustedNetworkGroups>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2057
  Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 13:44:10 GMT

<TrustedNetworkGroups href="/trustedNetworkGroups/environments/1"
  type="application/vnd.tmrk.cloud.trustedNetworkGroup; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="My Environment" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/trustedNetworkGroups/environments/1/action/createTrustedNetworkGroup"
      name="createTrustedNetworkGroup" type="application/vnd.tmrk.cloud.createTrustedNetworkGroup"/>

  </Actions>

  <TrustedNetworkGroup href="/trustedNetworkGroups/1" name="My Trusted Network Group"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup">

    <Links>

      <Link href="/environments/1" name="My Environment" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>

    </Links>

    <Actions>

      <Action href="/trustedNetworkGroups/1" name="edit"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

      <Action href="/trustedNetworkGroups/1" name="remove" actionDisabled="disabled"/>

    </Actions>

    <Hosts>

      <IpAddress>1.2.3.4</IpAddress>

      <IpAddress>1.2.3.5</IpAddress>

    </Hosts>

    <Networks>

      <Network>

        <Address>192.168.5.0</Address>

        <Size>30</Size>

      </Network>

      <Network>

        <Address>192.168.8.0</Address>

        <Size>27</Size>

      </Network>
```

```
    </Networks>
    <InternetServices>
      <InternetService href="/internetServices/1" name="Internet Service 1"
        type="application/vnd.tmrk.cloud.internetService"/>
      <InternetService href="/internetServices/2" name="Internet Service 2"
        type="application/vnd.tmrk.cloud.internetService"/>
    </InternetServices>
  </TrustedNetworkGroup>
  <TrustedNetworkGroup href="/trustedNetworkGroups/2" name="My Trusted Network Group"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup">
    <Links>
      <Link href="/environments/1" name="My Environment" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/trustedNetworkGroups/2" name="edit"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
      <Action href="/trustedNetworkGroups/2" name="remove"/>
    </Actions>
    <Hosts>
      <IpAddress>1.2.3.4</IpAddress>
      <IpAddress>1.2.3.5</IpAddress>
    </Hosts>
    <Networks>
      <Network>
        <Address>192.168.5.0</Address>
        <Size>30</Size>
      </Network>
      <Network>
        <Address>192.168.8.0</Address>
        <Size>27</Size>
      </Network>
    </Networks>
  </TrustedNetworkGroup>
</TrustedNetworkGroups>
```


Return to *7.21 Trusted Network Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.21.2 Get Trusted Network Groups by ID

The Get Trusted Network Groups by ID call returns information regarding a specified trusted network group in an environment.

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
trusted network group identifier = 99	Error: no access to trusted network groups

Request

```
GET http://{Terremark URI}/trustedNetworkGroups/{trusted network group identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/trustedNetworkGroups/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<TrustedNetworkGroup href="/trustedNetworkGroups/1" name="{trusted network group name}"
  type="application/vnd.tmrk.cloud.trustedNetworkGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

    <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="remove"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>
```

```
      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>
      <StartTime>{time action started}</StartTime>
      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
      <Notes>{notes on action}</Notes>
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
      ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Hosts>
    <IpAddress>{host IP address}</IpAddress>
      ⋮
  </Hosts>
  <Networks>
    <Network>
      <Address>{network address}</Address>
      <Size>{network prefix length}</Size>
    </Network>
      ⋮
  </Networks>
  <InternetServices> <!-- empty on TNGs defined but not yet bound to an Internet service -->
    <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
      name}" type="application/vnd.tmrk.cloud.internetService"/>
      ⋮
  </InternetServices>
</TrustedNetworkGroup>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 990
  Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 16:20:13 GMT
<TrustedNetworkGroup href="/trustedNetworkGroups/1" name="My Trusted Network Group"
  type="application/vnd.tmrk.cloud.trustedNetworkGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
```

```
    <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/trustedNetworkGroups/1" name="edit"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    <Action href="/trustedNetworkGroups/1" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Hosts>
    <IpAddress>1.2.3.4</IpAddress>
    <IpAddress>1.2.3.5</IpAddress>
  </Hosts>
  <Networks>
    <Network>
      <Address>192.168.5.0</Address>
      <Size>30</Size>
    </Network>
    <Network>
      <Address>192.168.8.0</Address>
      <Size>27</Size>
    </Network>
  </Networks>
  <InternetServices>
    <InternetService href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService"/>
    <InternetService href="/internetServices/2" name="Internet Service 2"
      type="application/vnd.tmrk.cloud.internetService"/>
  </InternetServices>
</TrustedNetworkGroup>
```

Return to *7.21 Trusted Network Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.21.3 Action Trusted Network Groups Create

The Action Trusted Network Groups Create call creates a trusted network group. If successful, the call returns information regarding the trusted network group that was created.

The `name` attribute on <CreateTrustedNetworkGroup … > is required.

Note: The `name` may not be that of another trusted network group and may not exceed fifty characters.

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
trusted network group identifier = 99	Error: no access to trusted network groups

Request

```
POST http://{Terremark URI}/trustedNetworkGroups/environments/{environment
  identifier}/action/createTrustedNetworkGroup
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/trustedNetworkGroups/environments/1/ …
  action/createTrustedNetworkGroup
```

Body

```
<CreateTrustedNetworkGroup name="{trusted network group name}"> <!-- Required -->
  <Hosts> <!-- Optional -->
    <IpAddress>{host IP address}</IpAddress>
      ⋮
  </Hosts>
  <Networks> <!-- Optional -->
    <Network>
      <Address>{network address}</Address>
      <Size>{network prefix length}</Size>
    </Network>
      ⋮
  </Networks>
</CreateTrustedNetworkGroup>
```

EXAMPLE

```
<CreateTrustedNetworkGroup name="My Trusted Network Group">
  <Hosts>
    <IpAddress>1.2.3.4</IpAddress>
    <IpAddress>1.2.3.5</IpAddress>
  </Hosts>
  <Networks>
    <Network>
      <Address>192.168.5.0</Address>
      <Size>30</Size>
```

```
    </Network>
    <Network>
      <Address>192.168.8.0</Address>
      <Size>27</Size>
    </Network>
  </Networks>
</CreateTrustedNetworkGroup>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup
  Location: /trustedNetworkGroups/{trusted network group identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
  network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="edit"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    <Action href="/trustedNetworkGroups/{trusted network group identifier}" name="remove"/>
  </Actions>
  <Hosts>
    <IpAddress>{host IP address}</IpAddress>
      ⋮
  </Hosts>
  <Networks>
    <Network>
      <Address>{network address}</Address>
      <Size>{network prefix length}</Size>
    </Network>
      ⋮
  </Networks>
  <InternetServices> <!-- absent on TNGs defined but not yet bound to an Internet service -->
    <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
```

```
      name}" type="application/vnd.tmrk.cloud.internetService"/>
      ⋮
    </InternetServices>
  </TrustedNetworkGroup>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 990
    Content-Type: application/vnd.tmrk.cloud.trustedNetworkGroup
    Location: /trustedNetworkGroups/1
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 16 Jun 2011 19:52:44 GMT
  <TrustedNetworkGroup href="/trustedNetworkGroups/1" name="My Trusted Network Group"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/environments/1" name="My Environment" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/trustedNetworkGroups/1" name="edit"
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
      <Action href="/trustedNetworkGroups/1" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Hosts>
      <IpAddress>1.2.3.4</IpAddress>
      <IpAddress>1.2.3.5</IpAddress>
    </Hosts>
    <Networks>
      <Network>
        <Address>192.168.5.0</Address>
        <Size>30</Size>
      </Network>
      <Network>
        <Address>192.168.8.0</Address>
        <Size>27</Size>
      </Network>
    </Networks>
  </TrustedNetworkGroup>
```

Return to *7.21 Trusted Network Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.21.4 Action Trusted Network Groups Edit

The Action Trusted Network Groups Edit call edits the name of, or the hosts and networks in, a trusted network group. If successful, the call returns the task that modified the trusted network group.

The `name` attribute on <CreateTrustedNetworkGroup … > is required and may be changed.

Note: The `name` may not be changed to that of another trusted network group and may not exceed fifty characters.

Both <Hosts> and <Networks> are optional. Including an <IpAddress> or <Network> not currently on the trusted network group adds that host or network to the trusted network group.

Note: If any <IpAddress> is valued on the trusted network group and not present in the call, that host's IP address is removed from the trusted network group. Similarly, if any <Network> is valued on the trusted network group and not present in the call, that network is removed from the trusted network group.

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
trusted network group identifier = 99	Error: no access to trusted network groups

Request

```
PUT http://{Terremark URI}/trustedNetworkGroups/{trusted network group identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/trustedNetworkGroups/1
```

Body

```
<TrustedNetworkGroup name="{trusted network group name}"> <!-- Required -->
  <Hosts> <!-- Optional -->
    <IpAddress>{host IP address}</IpAddress>
      ⋮
  </Hosts>
  <Networks> <!-- Optional -->
    <Network>
      <Address>{network address}</Address>
      <Size>{network prefix length}</Size>
    </Network>
      ⋮
```

```
    </Networks>
  </TrustedNetworkGroup>
```

EXAMPLE

```
  <TrustedNetworkGroup name="My Trusted Network Group">
    <Hosts>
      <IpAddress>1.2.3.4</IpAddress>
      <IpAddress>1.2.3.5</IpAddress>
    </Hosts>
    <Networks>
      <Network>
        <Address>192.168.5.0</Address>
        <Size>30</Size>
      </Network>
      <Network>
        <Address>192.168.8.0</Address>
        <Size>27</Size>
      </Network>
    </Networks>
  </TrustedNetworkGroup>
```

Response

```
  HTTP/1.1 202 Accepted
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.task
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Operation>Configure Trusted Network Group</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
      acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 509
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 20:00:26 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Trusted Network Group</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/trustedNetworkGroups/1"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  <StartTime>2011-06-16T20:00:26.9136704Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.21 Trusted Network Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.21.5 Action Trusted Network Groups Remove

The Action Trusted Network Groups Remove call removes a trusted network group from an environment. If successful, the call returns the task that removed the trusted network group.

Note: To remove, the trusted network group may not be associated to an Internet service.

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
trusted network group identifier = 99	Error: no access to trusted network groups
trusted network group identifier = 1 or 57	Has Internet services

Request

```
DELETE http://{Terremark URI}/trustedNetworkGroups/{trusted network group identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/trustedNetworkGroups/2
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Trusted Network Group</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 511
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 20:05:00 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Trusted Network Group</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/trustedNetworkGroups/2"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  <StartTime>2011-06-16T20:05:00.5166704Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.21 Trusted Network Group*.

Return to *7 Application Programming Interface Reference Guide*.

7.22 Public IP

7.22.1 Get Public IPs 702

7.22.2 Get Public IPs by ID 704

7.22.3 Action Public IPs Activate 713

7.22.4 Action Public IPs Remove 714

Advance to *7.23 Firewall Rule*.

This section contains the calls for the Public IP entity.

Return to *7 Application Programming Interface Reference Guide*.

7.22.1 Get Public IPs

The Get Public IPs call returns information regarding public IP addresses defined in an environment.

<IpType> permitted values are:

- **defaultRnat** – defined as the default endpoint of a Reverse Network Address Translation
- **rnat** – defined as the endpoint of a Reverse Network Address Translation
- **none** – not currently in use.

Live Specification Test Values

Condition	Outcome
public IP identifier = 1	Default RNAT
public IP identifier mod 2 = 0	Has RNAT
public IP identifier mod 2 = 1 and> 2	No RNAT
public IP identifier = 1 or mod 3 = 0	Has Internet services
environment identifier = 99	Error: no access to environments
public IP identifier = 99	Error: no access to public IPs

Request

```
GET http://{Terremark URI}/publicIps/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/publicIps/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
```

```
  Content-Type: application/vnd.tmrk.cloud.publicIp; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PublicIpAddresses href="/publicIps/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.publicIp; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
    type="application/vnd.tmrk.cloud.publicIp">

    <IpType>{defaultRnat | rnat | none}</IpType>

  </PublicIp>

    ⋮

  <Remaining>{number of unused public IP addresses purchased}</Remaining>

</PublicIpAddresses>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 745
  Content-Type: application/vnd.tmrk.cloud.publicIp; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 26 May 2011 17:28:07 GMT

<PublicIpAddresses href="/publicIps/environments/1" type="application/vnd.tmrk.cloud.publicIp;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="My environment" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp">

    <IpType>defaultRnat</IpType>

  </PublicIp>

  <PublicIp href="/publicIps/2" name="72.46.234.14" type="application/vnd.tmrk.cloud.publicIp">

    <IpType>rnat</IpType>

  </PublicIp>

  <PublicIp href="/publicIps/3" name="72.46.234.55" type="application/vnd.tmrk.cloud.publicIp">

    <IpType>none</IpType>

  </PublicIp>

  <Remaining>3</Remaining>
```

```
</PublicIpAddresses>
```

Return to *7.22 Public IP*.

Return to *7 Application Programming Interface Reference Guide*.

7.22.2 Get Public IPs by ID

The Get Public IPs by ID call returns information regarding a specified public IP address defined in an environment.

<PublicIpType> permitted values are:

- **defaultRnat** – defined as the default endpoint of a Reverse Network Address Translation
- **rnat** – defined as the endpoint of a Reverse Network Address Translation
- **none** – not currently in use.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

Live Specification Test Values

Condition	Outcome
public IP identifier = 1	Default RNAT
public IP identifier mod 2 = 0	Has RNAT
public IP identifier mod 2 = 1 and> 2	No RNAT
public IP identifier = 1 or mod 3 = 0	Has Internet services
environment identifier = 99	Error: no access to environments
public IP identifier = 99	Error: no access to public IPs

Request

```
GET http://{Terremark URI}/publicIps/{public IP identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/publicIps/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.publicIp
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
  type="application/vnd.tmrk.cloud.publicIp" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/rnats/{public IP identifier}" type="application/vnd.tmrk.cloud.rnat" rel="down"/>

  </Links>

  <Actions>

    <Action href="/internetServices/publicIps/{public IP identifier}/action/createInternetService"
      name="createInternetService" type="application/vnd.tmrk.cloud.createInternetService"/>

  </Actions>

  <PublicIpType>{defaultRnat | rnat | none}</PublicIpType>

  <InternetServices>

    <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
      name}" type="application/vnd.tmrk.cloud.internetService">

      <Links>

        <Link href="/publicIps/{public IP identifier}" name="{public IP address}"
          type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

      </Links>

      <Actions>

        <Action href="/internetServices/{Internet service identifier}" name="edit"
          type="application/vnd.tmrk.cloud.internetService"/>

        <Action href="/nodeServices/internetServices/{Internet service
          identifier}/action/createNodeService" name="createNodeService"
          type="application/vnd.tmrk.cloud.createNodeService"/>

        <Action href="/internetServices//{Internet service identifier}" name="remove"
          actionDisabled="{noAccess | disabled}"/>

        <Action href="/internetServices/{Internet service identifier}/action/createEcvMonitor"
```

```
    name="createEcvMonitor" type="application/vnd.tmrk.cloud.createEcvMonitor"/>

  <Action href="/internetServices/{Internet service identifier}/action/createHttpMonitor"
    name="createHttpMonitor" type="application/vnd.tmrk.cloud.createHttpMonitor"/>

  <Action href="/internetServices/{Internet service identifier}/action/createPingMonitor"
    name="createPingMonitor" type="application/vnd.tmrk.cloud.createPingMonitor"/>

  <Action href="/internetServices/{Internet service identifier}/action/createDefaultMonitor"
    name="createDefaultMonitor" actionDisabled="{noAccess | disabled}"/>

  <Action href="/internetServices/{Internet service identifier}/action/createLoopbackMonitor"
    name="createLoopbackMonitor"/>

</Actions>

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running
      -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>H

<Port>{port number of service, range of 1 to 65535}</Port>

<Enabled>{true | false}</Enabled>

<Description>{textual description}</Description>

<PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
  type="application/vnd.tmrk.cloud.publicIp"/>

<Persistence>

  <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>

  <Timeout>{persistence time in minutes}</Timeout>

</Persistence>

<RedirectUrl>{redirect URL}/</RedirectUrl> <!-- Present only for HTTP -->

<TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
  name="{trusted network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
```

```
<BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
 name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"/>

<NodeServices>

 <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
  type="application/vnd.tmrk.cloud.nodeService">

  <Links>

   <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
    type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

   <Action href="/nodeServices/{node service identifier}" name="edit"
    type="application/vnd.tmrk.cloud.nodeService"/>

   <Action href="/nodeServices/{node service identifier}" name="remove"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
   type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

   <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type
     of item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or
     Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
     type="application/vnd.tmrk.cloud.admin.user"/>

   </Task>

    ⋮

   <TotalCount>{total number of tasks}</TotalCount>

  </Tasks>

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
   address}" type="application/vnd.tmrk.cloud.ipAddress">

   <Network href="/networks/{network identifier}" name="{network address}/{network prefix
    length}" type="application/vnd.tmrk.cloud.network"/>

   <Host href="/networkHosts/{network host identifier}" name="{network host name}"
    type="application/vnd.tmrk.cloud.networkHost"/>

  </IpAddress>

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

  <Port>{port number of service, range of 1 to 65535}</Port>
```

```
        <Enabled>{true | false}</Enabled>
        <Description>{textual description}</Description>
      </NodeService>
        ⋮
    </NodeServices>
  </InternetService>
    ⋮
</InternetServices>
</PublicIp>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 8517
  Content-Type: application/vnd.tmrk.cloud.publicIp
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 14:39:36 GMT
<PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/1" name="My environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/rnats/1" type="application/vnd.tmrk.cloud.rnat" rel="down"/>
  </Links>
  <Actions>
    <Action href="/internetServices/publicIps/1/action/createInternetService"
      name="createInternetService" type="application/vnd.tmrk.cloud.createInternetService"/>
  </Actions>
  <PublicIpType>defaultRnat</PublicIpType>
  <InternetServices>
    <InternetService href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService">
      <Links>
        <Link href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp"
          rel="up"/>
      </Links>
      <Actions>
        <Action href="/internetServices/1" name="edit"
          type="application/vnd.tmrk.cloud.internetService"/>
        <Action href="/nodeServices/internetServices/1/action/createNodeService"
          name="createNodeService" type="application/vnd.tmrk.cloud.createNodeService"/>
        <Action href="/internetServices/1" name="remove" actionDisabled="disabled"/>
```

```
    <Action href="/internetServices/1/action/createEcvMonitor" name="createEcvMonitor"
     type="application/vnd.tmrk.cloud.createEcvMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/1/action/createHttpMonitor" name="createHttpMonitor"
     type="application/vnd.tmrk.cloud.createHttpMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/1/action/createPingMonitor" name="createPingMonitor"
     type="application/vnd.tmrk.cloud.createPingMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/1/action/createDefaultMonitor" name="createDefaultMonitor"
     actionDisabled="disabled"/>

    <Action href="/internetServices/1/action/createLoopbackMonitor" name="createLoopbackMonitor"
     actionDisabled="disabled"/>

  </Actions>

  <Protocol>HTTP</Protocol>

  <Port>80</Port>

  <Enabled>true</Enabled>

  <Description>Public Website</Description>

  <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>

  <Persistence>

    <Type>SourceIp</Type>

    <Timeout>5</Timeout>

  </Persistence>

  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>

  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
    type="application/vnd.tmrk.cloud.backupInternetService"/>

  <NodeServices>

    <NodeService href="/nodeServices/1" name="Node Service 1"
     type="application/vnd.tmrk.cloud.nodeService">

      <Links>

        <Link href="/internetServices/1" name="Internet Service 1"
         type="application/vnd.tmrk.cloud.internetService" rel="up"/>

      </Links>

      <Actions>

        <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

        <Action href="/nodeServices/1" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
       type="application/vnd.tmrk.cloud.ipAddress">

        <Network href="/networks/4" name="10.122.145.64/27"
         type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/12" name="WebServer1"
```

```
        type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
    <NodeService href="/nodeServices/2" name="Node Service 2"
      type="application/vnd.tmrk.cloud.nodeService">
      <Links>
        <Link href="/internetServices/1" name="Internet Service 1"
          type="application/vnd.tmrk.cloud.internetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/2" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/4" name="10.122.145.64/27"
          type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/12" name="WebServer1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
  </NodeServices>
</InternetService>
<InternetService href="/internetServices/2" name="Internet Service 1"
  type="application/vnd.tmrk.cloud.internetService">
  <Links>
    <Link href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/2" name="edit"
      type="application/vnd.tmrk.cloud.internetService"/>
```

```
    <Action href="/nodeServices/internetServices/2/action/createNodeService"
     name="createNodeService" type="application/vnd.tmrk.cloud.createNodeService"/>

    <Action href="/internetServices/2" name="remove" actionDisabled="disabled"/>

    <Action href="/internetServices/2/action/createEcvMonitor" name="createEcvMonitor"
     type="application/vnd.tmrk.cloud.createEcvMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/2/action/createHttpMonitor" name="createHttpMonitor"
     type="application/vnd.tmrk.cloud.createHttpMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/2/action/createPingMonitor" name="createPingMonitor"
     type="application/vnd.tmrk.cloud.createPingMonitor" actionDisabled="disabled"/>

    <Action href="/internetServices/2/action/createDefaultMonitor" name="createDefaultMonitor"/>

    <Action href="/internetServices/2/action/createLoopbackMonitor" name="createLoopbackMonitor"
     actionDisabled="disabled"/>

  </Actions>

  <Protocol>HTTP</Protocol>

  <Port>80</Port>

  <Enabled>true</Enabled>

  <Description>Public Website</Description>

  <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>

  <Persistence>

    <Type>SourceIp</Type>

    <Timeout>5</Timeout>

  </Persistence>

  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>

  <Monitor href="/internetServices/2/monitor" type="application/vnd.tmrk.cloud.httpMonitor"/>

  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
    type="application/vnd.tmrk.cloud.backupInternetService"/>

  <NodeServices>

    <NodeService href="/nodeServices/1" name="Node Service 1"
     type="application/vnd.tmrk.cloud.nodeService">

      <Links>

        <Link href="/internetServices/2" name="Internet Service 1"
         type="application/vnd.tmrk.cloud.internetService" rel="up"/>

      </Links>

      <Actions>

        <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

        <Action href="/nodeServices/1" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
       type="application/vnd.tmrk.cloud.ipAddress">
```

```
          <Network href="/networks/4" name="10.122.145.64/27"
            type="application/vnd.tmrk.cloud.network"/>

          <Host href="/networkHosts/12" name="WebServer1"
            type="application/vnd.tmrk.cloud.networkHost"/>

        </IpAddress>

        <Protocol>HTTP</Protocol>

        <Port>80</Port>

        <Enabled>true</Enabled>

        <Description>This is a node service.</Description>

      </NodeService>

      <NodeService href="/nodeServices/2" name="Node Service 2"
        type="application/vnd.tmrk.cloud.nodeService">

        <Links>

          <Link href="/internetServices/2" name="Internet Service 1"
            type="application/vnd.tmrk.cloud.internetService" rel="up"/>

        </Links>

        <Actions>

          <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

          <Action href="/nodeServices/2" name="remove"/>

        </Actions>

        <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
          type="application/vnd.tmrk.cloud.ipAddress">

          <Network href="/networks/4" name="10.122.145.64/27"
            type="application/vnd.tmrk.cloud.network"/>

          <Host href="/networkHosts/12" name="WebServer1"
            type="application/vnd.tmrk.cloud.networkHost"/>

        </IpAddress>

        <Protocol>HTTP</Protocol>

        <Port>80</Port>

        <Enabled>true</Enabled>

        <Description>This is a node service.</Description>

      </NodeService>

    </NodeServices>

  </InternetService>

</InternetServices>

</PublicIp>
```


Return to *7.22 Public IP*.

Return to *7 Application Programming Interface Reference Guide*.

7.22.3 Action Public IPs Activate

The Action Public IPs Activate call activates an additional public IP address from the pool of purchased public IP addresses in the environment. The call returns information regarding the public IP address activated.

<PublicIpType> permitted values are:

- **defaultRnat** – defined as the default endpoint of a Reverse Network Address Translation
- **rnat** – defined as the endpoint of a Reverse Network Address Translation
- **none** – not currently in use.

Request

```
POST http://{Terremark URI}/publicIps/environments/{environment identifier}/action/activatePublicIp
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/publicIps/environments/1/action/activatePublicIp
```

Body

none

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.publicIp
  Location: /publicIps/{public IP identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
  type="application/vnd.tmrk.cloud.publicIp" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/rnats/{public IP identifier}" type="application/vnd.tmrk.cloud.rnat" rel="down"/>

  </Links>

  <Actions>

    <Action href="/internetServices/publicIps/{public IP identifier}/action/createInternetService"
      name="createInternetService" type="application/vnd.tmrk.cloud.createInternetService"/>

  </Actions>

  <PublicIpType>{defaultRnat | rnat | none}</PublicIpType>

</PublicIp>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 627
  Content-Type: application/vnd.tmrk.cloud.publicIp
```

```
  Location: /publicIps/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 08 Jun 2011 21:38:58 GMT

<PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="My environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/rnats/1" type="application/vnd.tmrk.cloud.rnat" rel="down"/>

  </Links>

  <Actions>

    <Action href="/internetServices/publicIps/1/action/createInternetService"
      name="createInternetService" type="application/vnd.tmrk.cloud.createInternetService"/>

  </Actions>

  <PublicIpType>none</PublicIpType>

</PublicIp>
```

Return to *7.22 Public IP*.

Return to *7 Application Programming Interface Reference Guide*.

7.22.4 Action Public IPs Remove

The Action Public IPs Remove call removes a specified public IP address from an environment. If successful, the call returns the task that removed the public IP address.

Note: This call is applicable to vCloud Express only.

Live Specification Test Values

Condition	Outcome
public IP identifier = 1	Default RNAT
public IP identifier mod 2 = 0	Has RNAT
public IP identifier mod 2 = 1 and> 2	No RNAT
public IP identifier = 1 or mod 3 = 0	Has Internet services
environment identifier = 99	Error: no access to environments
public IP identifier = 99	Error: no access to public IPs

Request

```
DELETE http://{Terremark URI}/publicIps/{public IP identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/publicIps/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Public IP</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 511
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 16 Nov 2011 20:05:00 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

<Operation>Delete Public IP</Operation>

<Status>Queued</Status>

<ImpactedItem href="/publicIps/1" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

<StartTime>2011-10-16T20:05:00.5166704Z</StartTime>

<Notes>Some notes about the operation.</Notes>

<InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.22 Public IP*.

Return to *7 Application Programming Interface Reference Guide*.

7.23 Firewall Rule

7.23.1 Get Firewall Rules 716

7.23.2 Get Firewall Rules Custom 737

7.23.3 Get Firewall Rules Node Service 743

7.23.4 Action Firewall Rules Create 748

7.23.5 Action Firewall Rules Remove 755

Advance to *7.24 Firewall Log*.

This section contains the calls for the Firewall Rule entity. To modify a firewall rule, remove it and create a new firewall rule. Firewall rules create Access Control List entries (ACLs) by which the firewall permits or denies traffic.

Return to *7 Application Programming Interface Reference Guide*.

7.23.1 Get Firewall Rules

The Get Firewall Rules call returns information regarding firewall rules defined in an environment.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

<Actions> is not present on firewall Rules with<AclType>internetService</AclType>. When node services are assigned to or removed from an Internet service the firewall rule is created or destroyed automatically.

The order in which firewall rules are evaluated is important to ensuring only desired traffic is permitted through the firewall. Firewall rules with<AclType>internetService</AclType>are automatically created and placed appropriately in the evaluation order. For firewall rules with <AclType>custom</AclType>, all firewall rules with <Permission>deny</Permission> are evaluated before any firewall rules with <Permission>allow</Permission>. The final firewall rule evaluated denies all traffic.

This call may include optional query parameters. Separate query parameters from the call with a question mark (`?`) and separate parameters from each other with an ampersand (`&`). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = all items
pageSize	Number of items returned per page between 1 and 1000; default = 20
direction	asc ascending desc descending default = descending

Parameter	Usage
sortBy	All FirewallAcl elements are permitted as the sort key: • Permission • Type • Source • Protocol • Port • Destination
permission	allow — allow inside traffic deny — deny outside traffic
aclType	custom — custom rule defined by the organization internetService — automatic rule for Internet service
fromTo	outsideTraffic — rules that permit outside traffic network — see `network` device — see `device`; optionally permits IP address, see `ip` externalNetwork — see `externalNetwork` externalIp — see `externalIp` externalAny — either `externalNetwork` or `externalIp` default = all traffic
network	{network address}/{network prefix length}
device	{network host name}
ip	{host IP address} — see the ***Note*** below.
externalNetwork	{external network address}/{external network prefix length}
externalIp	{external host IP address}

Note: If `fromTo` is set to `device`, then in addition to the required `device` parameter the `ip` parameter may also be valued. If the `device` parameter is used alone, then rules for all IP addresses for that device are included. If the `device` parameter is used with the `ip` parameter, then rules for only that single IP address are included.

In <Source> and <Destination>, the sibling element varies by the value of <Type> as shown in the table.

<Type/> Value	Sibling Element
<Type>Any</Type>	no sibling element
<Type>IpAddress</Type>	<IpAddress … > <Network …/> <Host …/> </IpAddress>
<Type>Network</Type>	<Network … > <NetworkType> … </NetworkType> </Network>
<Type>ExternalIp</Type>	<ExternalIpAddress> … </ExternalIpAddress>

<Type/> Value	Sibling Element
<Type>ExternalNetwork</Type>	<ExternalNetwork> <Address> … </Address> <Size> … </Size> </ExternalNetwork>

With <PortType>Any</PortType>, <PortRange> is not meaningful and therefore not included. With <PortType>Specific</PortType>, the values of <Start> and <End> of <PortRange> are equal to the specific port required. With <PortType>Range</PortType>, the values of <Start> and <End> of <PortRange> are equal to the beginning port number and the ending port number, inclusively, of the range required.

<Permission> permitted values are:

- **allow** –internal traffic meeting the requirements of the rule is allowed.
- **deny** – external traffic meeting the requirements of the rule is denied.

<AclType> permitted values are:

- **internetService** – rule is applied to an Internet service.
- **custom** – rule is custom.

<PortType> permitted values are:

- **Any** – all ports included in the requirements
- **Specific** – only specific ports included in the requirements
- **Range** – a range of ports included in the requirements

<Protocol> permitted values are:

- **Any** – Any protocol satisfies the rule.
- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> permitted values are:

- **Any** – all sources or destinations included in the requirements.
- **IpAddress** –a specific internal address included in the source or destination requirements.
- **Network** – a specific internal network included in the source or destination requirements.

- **ExternalIp** – a specific external address included in the source or destination requirements.
- **ExternalNetwork** – a specific external network included in the source or destination requirements.
- **TrustedNetworkGroup** – a trusted network group defined in the environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
Firewall rule identifier mod 3 = 0	rule port type = Range
Firewall rule identifier mod 2 = 0	rule port type = Any
Firewall rule identifier mod 2 = 0	Internet service rule
Firewall rule identifier mod 5 = 0	Source = external IP address
Firewall rule identifier mod 5 = 0	Destination = network
Firewall rule identifier mod 4 = 0	Source = external network
Firewall rule identifier mod 4 = 0	Destination = IP address
Firewall rule identifier mod 3 = 0	Source = IP address
Firewall rule identifier mod 3 = 0	Destination = external network
Firewall rule identifier mod 7 = 0	Source = any
Firewall rule identifier mod 7 = 0	Destination = any
environment identifier = 99	Error: no access to environments
firewall rule identifier = 99	Error: no access to firewall rules

Request

```
GET http://{Terremark URI}/firewallAcls/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/firewallAcls/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallAcl; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

```
<FirewallAcls href="/firewallAcls/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.firewallAcl; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

    <Link href="/firewallAcls/environments/{environment identifier}?page={page
      number}&amp;pageSize={items per page}&amp;direction={asc | desc}&amp;sortBy={Permission | Type |
      Source | Protocol | Port | Destination}&amp;permission={allow | deny}&amp;aclType={custom |
      internetService}&amp;fromTo={outsideTraffic | network | device | externalNetwork | externalIp |
      externalAny}&amp;network={network address}/{network prefix length}&amp;device={network host
      name}&amp;externalNetwork={external network address}/{external network prefix
      length}&amp;externalIp={external host IP address}" type="application/vnd.tmrk.cloud.firewallAcl;
      type=collection" rel="first"/>

    <Link href="/firewallAcls/environments/{environment identifier}?page={page
      number}&amp;pageSize={items per page}&amp;direction={asc | desc}&amp;sortBy={Permission | Type |
      Source | Protocol | Port | Destination}&amp;permission={allow | deny}&amp;aclType={custom |
      internetService}&amp;fromTo={outsideTraffic | network | device | externalNetwork | externalIp |
      externalAny}&amp;network={network address}/{network prefix length}&amp;device={network host
      name}&amp;externalNetwork={external network address}/{external network prefix
      length}&amp;externalIp={external host IP address}" type="application/vnd.tmrk.cloud.firewallAcl;
      type=collection" rel="previous"/>

    <Link href="/firewallAcls/environments/{environment identifier}?page={page
      number}&amp;pageSize={items per page}&amp;direction={asc | desc}&amp;sortBy={Permission | Type |
      Source | Protocol | Port | Destination}&amp;permission={allow | deny}&amp;aclType={custom |
      internetService}&amp;fromTo={outsideTraffic | network | device | externalNetwork | externalIp |
      externalAny}&amp;network={network address}/{network prefix length}&amp;device={network host
      name}&amp;externalNetwork={external network address}/{external network prefix
      length}&amp;externalIp={external host IP address}" type="application/vnd.tmrk.cloud.firewallAcl;
      type=collection" rel="next"/>

    <Link href="/firewallAcls/environments/{environment identifier?page={page
      number}&amp;pageSize={items per page}&amp;direction={asc | desc}&amp;sortBy={Permission | Type |
      Source | Protocol | Port | Destination}&amp;permission={allow | deny}&amp;aclType={custom |
      internetService}&amp;fromTo={outsideTraffic | network | device | externalNetwork | externalIp |
      externalAny}&amp;network={network address}/{network prefix length}&amp;device={network host
      name}&amp;externalNetwork={external network address}/{external network prefix
      length}&amp;externalIp={external host IP address}" type="application/vnd.tmrk.cloud.firewallAcl;
      type=collection" rel="last"/>

  </Links>

  <Actions>

    <Action href="/firewallAcls/environments/{environment identifier}/action/addFirewallAcl"
      name="add" type="application/vnd.tmrk.cloud.createFirewallAcl"/>

  </Actions>

  <FirewallAcl href="/firewallAcls/{custom | nodeServices}/{firewall rule identifier | node service
    identifier}" type="application/vnd.tmrk.cloud.firewallAcl">

    <Links>

      <Link href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" rel="up"/>

      <!-- Link below present only when <AclType>internetService</AclType> -->

      <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}
```

```
    type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <!-- Actions not present when <AclType>internetService</AclType> -->
  <Actions>
   <Action href="/firewallAcls/custom/{firewall rule identifier}" name="remove"/>
  </Actions>
  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
   type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->
   <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
     item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running --
     >
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
     type="application/vnd.tmrk.cloud.admin.user"/>
   </Task>
    ⋮
   <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <Permission>{allow | deny}</Permission>
  <AclType>{internetService | custom}</AclType>
  <PortType>{Any | Specific | Range}</PortType>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
  <Source>
   <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>
   <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
   <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
     type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
     type="application/vnd.tmrk.cloud.networkHost"/>
   </IpAddress>
   <!-- <Network> element included only with <Type>Network</Type> -->
   <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
```

```
    type="application/vnd.tmrk.cloud.network">
    <NetworkType>{Dmz | Internal}</NetworkType>
  </Network>
  <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->
  <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
  <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
  <ExternalNetwork>
    <Address>{external network address}</Address>
    <Size>{external network prefix length}</Size>
  </ExternalNetwork>
  <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
    name="{trusted network group identifier}"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
</Source>
<Destination>
  <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>
  <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
  </IpAddress>
  <!-- <Network> element included only with <Type>Network</Type> -->
  <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
    type="application/vnd.tmrk.cloud.network">
    <NetworkType>{Dmz | Internal}</NetworkType>
  </Network>
  <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->
  <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
  <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
  <ExternalNetwork>
    <Address>{external network address}</Address>
    <Size>{external network prefix length}</Size>
  </ExternalNetwork>
  <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
    name="{trusted network group identifier}"
```

```
        type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
      </Destination>
      <PortRange> <!-- <PortRange> element absent when <PortType>Any</PortType> -->
        <Start>{port}</Start>
        <End>{port}</End> <!-- <End> equals <Start>element when <PortType>Specific</PortType> -->
      </PortRange>
    </FirewallAcl>
      ⋮
  </FirewallAcls>\
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 17474
    Content-Type: application/vnd.tmrk.cloud.firewallAcl; type=collection
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 19 Jul 2011 15:28:02 GMT
  <FirewallAcls href="/firewallAcls/environments/1" type="application/vnd.tmrk.cloud.firewallAcl;
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/environments/1" name="My Environment" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
      <Link href="/firewallAcls/environments/1?page=2" type="application/vnd.tmrk.cloud.firewallAcl;
        type=collection" rel="next"/>
      <Link href="/firewallAcls/environments/1?page=50" type="application/vnd.tmrk.cloud.firewallAcl;
        type=collection" rel="last"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/environments/1/action/createFirewallAcl" name="createFirewallAcl"
        type="application/vnd.tmrk.cloud.createFirewallAcl"/>
    </Actions>
    <FirewallAcl href="/firewallAcls/custom/1" type="application/vnd.tmrk.cloud.firewallAcl">
      <Links>
        <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      </Links>
      <Actions>
        <Action href="/firewallAcls/custom/1" name="remove"/>
      </Actions>
      <Permission>deny</Permission>
      <AclType>custom</AclType>
      <PortType>Specific</PortType>
```

```
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/2" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/3" type="application/vnd.tmrk.cloud.firewallAcl">
```

```
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/3" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Source>
    <Destination>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Destination>
    <PortRange>
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/4" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
```

```
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Source>
    <Destination>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/5" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/5" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Source>
    <Destination>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
```

```
      </Network>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/6" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Source>
    <Destination>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Destination>
    <PortRange>
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/7" type="application/vnd.tmrk.cloud.firewallAcl">
```

```
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/7" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Any</Type>
    </Source>
    <Destination>
      <Type>Any</Type>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/8" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Source>
```

```
    <Destination>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/9" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/9" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Source>
    <Destination>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Destination>
    <PortRange>
```

```
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/10" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Source>
    <Destination>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/11" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/11" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Network</Type>
```

```
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/12" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Source>
    <Destination>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Destination>
```

```
    <PortRange>
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/13" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/13" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/14" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
```

```
    <AclType>internetService</AclType>
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>Any</Type>
    </Source>
    <Destination>
      <Type>Any</Type>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/15" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/15" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Source>
    <Destination>
      <Type>Network</Type>
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Destination>
    <PortRange>
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/16" type="application/vnd.tmrk.cloud.firewallAcl">
```

```
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Any</PortType>
    <Protocol>TCP</Protocol>
    <Source>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Source>
    <Destination>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Destination>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/17" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/17" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Network</Type>
```

```
      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/18" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
    <AclType>internetService</AclType>
    <PortType>Range</PortType>
    <Protocol>UDP</Protocol>
    <Source>
      <Type>IpAddress</Type>
      <IpAddress href="/ipAddresses/networks/1/10.0.4.33" name="10.0.4.33"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Source>
    <Destination>
      <Type>ExternalNetwork</Type>
      <ExternalNetwork>
        <Address>4.4.8.0</Address>
        <Size>24</Size>
      </ExternalNetwork>
    </Destination>
```

```
    <PortRange>
      <Start>8000</Start>
      <End>8080</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/custom/19" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    </Links>
    <Actions>
      <Action href="/firewallAcls/custom/19" name="remove"/>
    </Actions>
    <Permission>deny</Permission>
    <AclType>custom</AclType>
    <PortType>Specific</PortType>
    <Protocol>HTTP</Protocol>
    <Source>
      <Type>Network</Type>
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
  <FirewallAcl href="/firewallAcls/nodeServices/20" type="application/vnd.tmrk.cloud.firewallAcl">
    <Links>
      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Permission>allow</Permission>
```

```
      <AclType>internetService</AclType>
      <PortType>Any</PortType>
      <Protocol>TCP</Protocol>
      <Source>
        <Type>ExternalIp</Type>
        <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
      </Source>
      <Destination>
        <Type>Network</Type>
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
          <NetworkType>Dmz</NetworkType>
        </Network>
      </Destination>
    </FirewallAcl>
  </FirewallAcls>
```

Return to *7.23 Firewall Rule*.

Return to *7 Application Programming Interface Reference Guide*.

7.23.2 Get Firewall Rules Custom

The Get Firewall Rules Custom call returns information regarding a specified custom firewall rule in an environment.

<Actions> is not present on firewall rules with<AclType>internetService</AclType>. When node services are assigned to or removed from an Internet service the firewall rule is created or destroyed automatically.

The order in which firewall rules are evaluated is important to ensuring only desired traffic is permitted through the firewall. Firewall rules with<AclType>internetService</AclType>are automatically created and placed appropriately in the evaluation order. For firewall rules with <AclType>custom</AclType>, all firewall rules with <Permission>deny</Permission> are evaluated before any firewall rules with <Permission>allow</Permission>. The final firewall rule evaluated denies all traffic.

In <Source> and <Destination>, the sibling element varies by the value of <Type> as shown in the table.

<Type/> Value	**Sibling Element**
<Type>Any</Type>	no sibling element
<Type>IpAddress</Type>	<IpAddress … > <Network …/> <Host …/> </IpAddress>

<Type/> Value	Sibling Element
<Type>Network</Type>	<Network … > <NetworkType> … </NetworkType> </Network>
<Type>ExternalIp</Type>	<ExternalIpAddress> … </ExternalIpAddress>
<Type>ExternalNetwork</Type>	<ExternalNetwork> <Address> … </Address> <Size> … </Size> </ExternalNetwork>

With <PortType>Any</PortType>, <PortRange> is not meaningful and therefore not included. With <PortType>Specific</PortType>, the values of <Start> and <End> of <PortRange> are equal to the specific port required. With <PortType>Range</PortType>, the values of <Start> and <End> of <PortRange> are equal to the beginning port number and the ending port number, inclusively, of the range required.

<Permission> permitted values are:

- **allow** –internal traffic meeting the requirements of the rule is allowed.
- **deny** – external traffic meeting the requirements of the rule is denied.

<AclType> permitted values are:

- **internetService** – rule is applied to an Internet service.
- **custom** – rule is custom.

<PortType> permitted values are:

- **Any** – all ports included in the requirements
- **Specific** – only specific ports included in the requirements
- **Range** – a range of ports included in the requirements

<Protocol> permitted values are:

- **Any** – Any protocol satisfies the rule.
- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> permitted values are:

- **Any** – all sources or destinations included in the requirements.
- **IpAddress** –a specific internal address included in the source or destination requirements.
- **Network** – a specific internal network included in the source or destination requirements.
- **ExternalIp** – a specific external address included in the source or destination requirements.
- **ExternalNetwork** – a specific external network included in the source or destination requirements.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
Firewall rule identifier mod 3 = 0	rule port type = Range
Firewall rule identifier mod 2 = 0	rule port type = Any
Firewall rule identifier mod 2 = 0	Internet service rule
Firewall rule identifier mod 5 = 0	Source = external IP address
Firewall rule identifier mod 5 = 0	Destination = network
Firewall rule identifier mod 4 = 0	Source = external network
Firewall rule identifier mod 4 = 0	Destination = IP address
Firewall rule identifier mod 3 = 0	Source = IP address
Firewall rule identifier mod 3 = 0	Destination = external network
Firewall rule identifier mod 7 = 0	Source = any
Firewall rule identifier mod 7 = 0	Destination = any
environment identifier = 99	Error: no access to environments
firewall rule identifier = 99	Error: no access to firewall rules

Request

```
GET http://{Terremark URI}/firewallAcls/custom/{firewall rule identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/firewallAcls/custom/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  x-tmrk-currentuser: /admin/users/{user identifier}
```

```
  x-tmrk-token: {token}
  Date: {timestamp of response}

<FirewallAcl href="/firewallAcls/{custom | nodeServices}/{firewall rule identifier | node service
  identifier}" type="application/vnd.tmrk.cloud.firewallAcl"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

      <!-- Link below present only when <AclType>internetService</AclType> -->

      <Link href="/internetServices/1" name="{Internet service name}
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <!-- Actions not present when <AclType>internetService</AclType> -->

  <Actions>

    <Action href="/firewallAcls/custom/{firewall rule identifier}" name="remove"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>

      <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
        type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

      ⋮

    <TotalCount>{total number of tasks}</TotalCount>

  </Tasks>

  <Permission>{allow | deny}</Permission>

  <AclType>{internetService | custom}</AclType>

  <PortType>{Any | Specific | Range}</PortType>

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

  <Source>

    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>

    <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
```

```
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>

      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>

    </IpAddress>

    <!-- <Network> element included only with <Type>Network</Type> -->

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">

      <NetworkType>{Dmz | Internal}</NetworkType>

    </Network>

    <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->

    <ExternalIpAddress>{external host IP address}</ExternalIpAddress>

    <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->

    <ExternalNetwork>

      <Address>{external network address}</Address>

      <Size>{external network prefix length}</Size>

    </ExternalNetwork>

    <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->

    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  </Source>

  <Destination>

    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>

    <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->

    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>

      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>

    </IpAddress>

    <!-- <Network> element included only with <Type>Network</Type> -->

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">

      <NetworkType>{Dmz | Internal}</NetworkType>

    </Network>

    <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->

    <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
```

```
    <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
    <ExternalNetwork>
      <Address>{external network address}</Address>
      <Size>{external network prefix length}</Size>
    </ExternalNetwork>
    <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  </Destination>
  <PortRange> <!-- <PortRange> absent when <PortType>Any</PortType> -->
    <Start>{port}</Start>
    <End>{port}</End> <!-- <End> equals <Start>element when <PortType>Specific</PortType> -->
  </PortRange>
</FirewallAcl>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 726
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 16:05:59 GMT
<FirewallAcl href="/firewallAcls/1" type="application/vnd.tmrk.cloud.firewallAcl"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/firewallAcls/1" name="remove"/>
  </Actions>
  <Permission>deny</Permission>
  <AclType>custom</AclType>
  <PortType>Specific</PortType>
  <Protocol>HTTP</Protocol>
  <Source>
    <Type>Network</Type>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
```

```
    </Source>
    <Destination>
      <Type>ExternalIp</Type>
      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
    </Destination>
    <PortRange>
      <Start>80</Start>
      <End>80</End>
    </PortRange>
  </FirewallAcl>
```

Return to *7.23 Firewall Rule*.

Return to *7 Application Programming Interface Reference Guide*.

7.23.3 Get Firewall Rules Node Service

The Get Firewall Rules Node Service call returns information regarding a specified Internet service firewall rule in an environment.

<Actions> is not present on firewall rules with<AclType>internetService</AclType>. When node services are assigned to or removed from an Internet service the firewall rule is created or destroyed automatically.

The order in which firewall rules are evaluated is important to ensuring only desired traffic is permitted through the firewall. Firewall rules with<AclType>internetService</AclType>are automatically created and placed appropriately in the evaluation order. For firewall rules with <AclType>custom</AclType>, all firewall rules with <Permission>deny</Permission> are evaluated before any firewall rules with <Permission>allow</Permission>. The final firewall rule evaluated denies all traffic.

In <Source> and <Destination>, the sibling element varies by the value of <Type> as shown in the table.

<Type/> Value	**Sibling Element**
<Type>Any</Type>	no sibling element
<Type>IpAddress</Type>	<IpAddress … > <Network …/> <Host …/> </IpAddress>
<Type>Network</Type>	<Network … > <NetworkType> … </NetworkType> </Network>
<Type>ExternalIp</Type>	<ExternalIpAddress> … </ExternalIpAddress>

<Type/> Value	Sibling Element
<Type>ExternalNetwork</Type>	<ExternalNetwork> <Address> … </Address> <Size> … </Size> </ExternalNetwork>

With <PortType>Any</PortType>, <PortRange> is not meaningful and therefore not included. With <PortType>Specific</PortType>, the values of <Start> and <End> of <PortRange> are equal to the specific port required. With <PortType>Range</PortType>, the values of <Start> and <End> of <PortRange> are equal to the beginning port number and the ending port number, inclusively, of the range required.

<Permission> permitted values are:

- **allow** –internal traffic meeting the requirements of the rule is allowed.
- **deny** – external traffic meeting the requirements of the rule is denied.

<AclType> permitted values are:

- **internetService** – rule is applied to an Internet service.
- **custom** – rule is custom.

<PortType> permitted values are:

- **Any** – all ports included in the requirements
- **Specific** – only specific ports included in the requirements
- **Range** – a range of ports included in the requirements

<Protocol> permitted values are:

- **Any** – Any protocol satisfies the rule.
- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> permitted values are:

- **Any** – all sources or destinations included in the requirements.
- **IpAddress** –a specific internal address included in the source or destination requirements.
- **Network** – a specific internal network included in the source or destination requirements.

- **ExternalIp** – a specific external address included in the source or destination requirements.
- **ExternalNetwork** – a specific external network included in the source or destination requirements.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
Firewall rule identifier mod 3 = 0	rule port type = Range
Firewall rule identifier mod 2 = 0	rule port type = Any
Firewall rule identifier mod 2 = 0	Internet service rule
Firewall rule identifier mod 5 = 0	Source = external IP address
Firewall rule identifier mod 5 = 0	Destination = network
Firewall rule identifier mod 4 = 0	Source = external network
Firewall rule identifier mod 4 = 0	Destination = IP address
Firewall rule identifier mod 3 = 0	Source = IP address
Firewall rule identifier mod 3 = 0	Destination = external network
Firewall rule identifier mod 7 = 0	Source = any
Firewall rule identifier mod 7 = 0	Destination = any
environment identifier = 99	Error: no access to environments
firewall rule identifier = 99	Error: no access to firewall rules

Request

```
GET http://{Terremark URI}/firewallAcls/nodeServices/{node service identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/firewallAcls/nodeServices/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<FirewallAcl href="/firewallAcls/{custom | nodeServices}/{firewall rule identifier | node service
  identifier}" type="application/vnd.tmrk.cloud.firewallAcl"
```

```
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<Links>
  <Link href="/environments/{environment identifier}" name="{environment name}"
    type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <!-- Link below present only when <AclType>internetService</AclType> -->
    <Link href="/internetServices/1" name="{Internet service name}
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
</Links>
<!-- Actions not present when <AclType>internetService</AclType> -->
<Actions>
  <Action href="/firewallAcls/custom/{firewall rule identifier}" name="remove"/>
</Actions>
<Permission>{allow | deny}</Permission>
<AclType>{internetService | custom}</AclType>
<PortType>{Any | Specific | Range}</PortType>
<Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
<Source>
  <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>
  <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
  </IpAddress>
  <!-- <Network> element included only with <Type>Network</Type> -->
  <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
    type="application/vnd.tmrk.cloud.network">
    <NetworkType>{Dmz | Internal}</NetworkType>
  </Network>
  <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->
  <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
  <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
  <ExternalNetwork>
    <Address>{external network address}</Address>
    <Size>{external network prefix length}</Size>
  </ExternalNetwork>
  <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
```

```
    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  </Source>

  <Destination>

    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>

    <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->

    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>

      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>

    </IpAddress>

    <!-- <Network> element included only with <Type>Network</Type> -->

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">

      <NetworkType>{Dmz | Internal}</NetworkType>

    </Network>

    <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->

    <ExternalIpAddress>{external host IP address}</ExternalIpAddress>

    <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->

    <ExternalNetwork>

      <Address>{external network address}</Address>

      <Size>{external network prefix length}</Size>

    </ExternalNetwork>

    <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->

    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  </Destination>

  <PortRange> <!-- <PortRange> absent when <PortType>Any</PortType> -->

    <Start>{port}</Start>

    <End>{port}</End> <!-- <End> equals <Start>element when <PortType>Specific</PortType> -->

  </PortRange>

</FirewallAcl>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 726
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  x-tmrk-currentuser: /admin/users/101
```

```
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Mon, 18 Jul 2011 21:53:48 GMT

  <FirewallAcl href="/firewallAcls/nodeServices/2" type="application/vnd.tmrk.cloud.firewallAcl"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/environments/1" type="application/vnd.tmrk.cloud.environment" rel="up"/>

      <Link href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService" rel="up"/>

    </Links>

    <Permission>allow</Permission>

    <AclType>internetService</AclType>

    <PortType>Any</PortType>

    <Protocol>TCP</Protocol>

    <Source>

      <Type>Network</Type>

      <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">

        <NetworkType>Dmz</NetworkType>

      </Network>

    </Source>

    <Destination>

      <Type>ExternalIp</Type>

      <ExternalIpAddress>4.4.8.8</ExternalIpAddress>

    </Destination>

  </FirewallAcl>
```

Return to *7.23 Firewall Rule*.

Return to *7 Application Programming Interface Reference Guide*.

7.23.4 Action Firewall Rules Create

The Action Firewall Rules Create call creates a new firewall rule in an environment. If successful, the call returns information regarding the firewall rule that was created.

Only firewall rules of <AclType>custom</AclType> may be created through the API. All firewall rules with <AclType>internetService</AclType> are created or destroyed automatically when node services are assigned to or removed from an Internet service.

The order in which firewall rules are evaluated is important to ensuring only desired traffic is permitted through the firewall. Firewall rules with<AclType>internetService</AclType>are automatically created and placed appropriately in the evaluation order. For firewall rules with <AclType>custom</AclType>, all firewall rules with <Permission>deny</Permission> are evaluated before any firewall rules with <Permission>allow</Permission>. The final firewall rule evaluated denies all traffic.

<Permission> is required and permitted values are:

- **allow** –internal traffic meeting the requirements of the rule is allowed.
- **deny** – external traffic meeting the requirements of the rule is denied.

<Protocol> is required and the only permitted values for a custom rule are:

- **Any** – Any protocol satisfies the rule.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.

<Type> permitted values are:

- **Any** – all hosts or networks included in the requirements for source or destination.
- **IpAddress** –a specific internal address included in the requirements for source or destination.
- **Network** – a specific internal network included in the requirements for source or destination.
- **ExternalIp** – a specific external address included in the requirements for source or destination.
- **ExternalNetwork** – a specific external network included in the requirements for source or destination.

<Source> and <Destination> are required. For <Permission>deny</Permission>, <Source> must be external and <Destination> must be<Type>Any</Type>. For <Permission>allow</Permission>, <Source> must be internal and <Destination> may be either internal or external. Values for <Type> for <Source> and <Destination> for each <Permission> is shown in the table.

<Permission/> Value	**Target**	**<Type/> Value**
<Permission>deny</Permission>	<Source>	<Type>ExternalIp</Type> **or** <Type>ExternalNetwork</Type>
	<Destination>	<Type>Any</Type>
<Permission>allow</Permission>	<Source>	<Type>IpAddress</Type> **or** <Type>Network</Type>
	<Destination>	<Type>IpAddress</Type> **or** <Type>Network</Type> **or** <Type>ExternalIp</Type> **or** <Type>ExternalNetwork</Type>

Under <Source> and <Destination>, <Type> is required. The required sibling element varies by the value of <Type> as shown in the table.

<Type/> Value	**Sibling Element**
<Type>Any</Type>	no sibling element

<Type/> Value	Sibling Element
<Type>IpAddress</Type>	<IpAddress … > <Network …/> <Host …/> </IpAddress>
<Type>Network</Type>	<Network … > <NetworkType> … </NetworkType> </Network>
<Type>ExternalIp</Type>	<ExternalIpAddress> … </ExternalIpAddress>
<Type>ExternalNetwork</Type>	<ExternalNetwork> <Address> … </Address> <Size> … </Size> </ExternalNetwork>

The `href` attribute of <IpAddress … > is required to identify the IP address to which access is allowed or denied.

The `href` attribute of <Network … > is required to identify the network to which access is allowed or denied.

With the <Start> and <End> missing, then the system sets <PortType>Any</PortType>. With the values of <Start> and <End> of <PortRange> are equal to the specific port required, then the system sets <PortType>Specific</PortType>. With the value of <Start> and <End> of <PortRange> equal to the beginning port number and the ending port number, inclusively, of the range desired, then the system sets <PortType>Range</PortType>. This table summarizes.

Desired <PortType/> Value	<PortRange/> Subordinate Element
<PortType>Any</PortType>	no subordinate elements
<PortType>Specific</PortType>	<Start> … </Start> equals <End> … </End>
<PortType>Range</PortType>	<Start> … </Start> less than <End> … </End>

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

<PortType> will be populated depending on the <PortRange> values. Permitted values are:

- **Any** – all ports included in the requirements

- **Specific** – only specific ports included in the requirements
- **Range** – a range of ports included in the requirements

Live Specification Test Values

Condition	Outcome
environment identifier = 99	Error: no access to environments
firewall rule identifier = 99	Error: no access to firewall rules

Request

```
POST http://{Terremark URI}/firewallAcls/environments/{environment
  identifier}/action/createFirewallAcl
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/firewallAcls/environments/1/ …
  action/createFirewallAcl
```

Body

```
<CreateFirewallAcl>
  <Permission>{deny | allow}</Permission> <!-- Required -->
  <Protocol>{Any | TCP | UDP}</Protocol> <!-- Required -->
  <Source> <!-- Required -->
    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type> <!-- Required -->
    <ExternalIpAddress>{external host IP address}</ExternalIpAddress> <!-- Optional -->
    <ExternalNetwork> <!-- Optional -->
      <Address>{external network address}</Address>
      <Size>{external network prefix length}</Size>
    </ExternalNetwork>
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}"/> <!-- Optional -->
    <Network href="/networks/{network identifier}"
      name="{network address}/{network prefix length}"/> <!-- Optional -->
  </Source>
  <Destination> <!-- Required -->
    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type> <!-- Required -->
    <ExternalIpAddress>{external host IP address}</ExternalIpAddress> <!-- Optional -->
    <ExternalNetwork> <!-- Optional -->
      <Address>{external network address}</Address>
      <Size>{external network prefix length}</Size>
    </ExternalNetwork>
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}"/> <!-- Optional -->
```

```
    <Network href="/networks/{network identifier}"
     name="{network address}/{network prefix length}"/> <!-- Optional -->
  </Destination>
  <PortRange> <!-- Required -->
    <Start>{starting port}</Start> <!-- Optional -->
    <End>{ending port}</End> <!-- Optional -->
  </PortRange>
</CreateFirewallAcl>
```

EXAMPLE

```
<CreateFirewallAcl>
  <Permission>allow</Permission>
  <Protocol>UDP</Protocol>
  <Source>
    <Type>Network</Type>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
  </Source>
  <Destination>
    <Type>ExternalIp</Type>
    <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
  </Destination>
  <PortRange>
    <Start>20</Start>
    <End>1024</End>
  </PortRange>
</CreateFirewallAcl>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  Location: /firewallAcls/{firewall rule identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<FirewallAcl href="/firewallAcls/{custom | nodeServices}/{firewall rule identifier | node service
  identifier}" type="application/vnd.tmrk.cloud.firewallAcl"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
```

```
    <Link href="/environments/{environment identifier}" name="{environment name}
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/firewallAcls/custom/{firewall rule identifier}" name="remove"/>
  </Actions>
  <Permission>{allow | deny}</Permission>
  <AclType>{internetService | custom}</AclType>
  <PortType>{Any | Specific | Range}</PortType>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
  <Source>
    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>
    <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>
      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>
    </IpAddress>
    <!-- <Network> element included only with <Type>Network</Type> -->
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">
      <NetworkType>{Dmz | Internal}</NetworkType>
    </Network>
    <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->
    <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
    <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
    <ExternalNetwork>
      <Address>{external network address}</Address>
      <Size>{external network prefix length}</Size>
    </ExternalNetwork>
    <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  </Source>
  <Destination>
    <Type>{Any | IpAddress | Network | ExternalIp | ExternalNetwork}</Type>
```

```
    <!-- <IpAddress> element included only with <Type>IpAddress</Type> -->
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>
      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>
    </IpAddress>
    <!-- <Network> element included only with <Type>Network</Type> -->
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">
      <NetworkType>{Dmz | Internal}</NetworkType>
    </Network>
    <!-- <ExternalIpAddress> element included only with <Type>ExternalIp</Type> -->
    <ExternalIpAddress>{external host IP address}</ExternalIpAddress>
    <!-- <ExternalNetwork> element included only with <Type>ExternalNetwork</Type> -->
    <ExternalNetwork>
      <Address>{external network address}</Address>
      <Size>{external network prefix length}</Size>
    </ExternalNetwork>
    <!-- <TrustedNetworkGroup> element included only with <Type>TrustedNetworkGroup</Type> -->
    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}"
      name="{trusted network group identifier}"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  </Destination>
  <PortRange> <!-- <PortRange> element absent when <PortType>Any</PortType> -->
    <Start>{port}</Start>
    <End>{port}</End> <!-- <End> element equals <Start>element when <PortType>Specific</PortType> -->
  </PortRange>
</FirewallAcl>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 826
  Content-Type: application/vnd.tmrk.cloud.firewallAcl
  Location: /firewallAcls/custom/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 01 Nov 2011 14:23:04 GMT
<FirewallAcl href="/firewallAcls/custom/1" type="application/vnd.tmrk.cloud.firewallAcl"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
```

```
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/firewallAcls/custom/1" name="remove"/>
  </Actions>
  <Permission>allow</Permission>
  <AclType>custom</AclType>
  <PortType>Range</PortType>
  <Protocol>UDP</Protocol>
  <Source>
    <Type>Network</Type>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
  </Source>
  <Destination>
    <Type>ExternalIp</Type>
    <ExternalIpAddress>4.4.8.8</ExternalIpAddress>
  </Destination>
  <PortRange>
    <Start>20</Start>
    <End>1024</End>
  </PortRange>
</FirewallAcl>
```


Return to *7.23 Firewall Rule*.

Return to *7 Application Programming Interface Reference Guide*.

7.23.5 Action Firewall Rules Remove

The Action Firewall Rules Remove call removes a custom firewall rule from an environment. If successful, the call returns the task that removed the firewall rule from the environment.

Note: Only firewall rules with an <AclType> of `custom` may be removed.

Live Specification Test Values

Condition	Outcome
Firewall rule identifier mod 2 = 0	Internet service rule
environment identifier = 99	Error: no access to environments

Condition	Outcome
firewall rule identifier = 99	Error: no access to firewall rules

Request

```
DELETE http://{Terremark URI}/firewallAcls/custom/{firewall rule identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/firewallAcls/custom/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Firewall Rule</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 487
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 18:00:25 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Firewall Rule</Operation>
```

```
    <Status>Queued</Status>
    <ImpactedItem href="/firewallAcls/1" type="application/vnd.tmrk.cloud.firewallAcl"/>
    <StartTime>2011-06-16T18:00:25.2196704Z</StartTime>
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
```

Return to *7.23 Firewall Rule*.

Return to *7 Application Programming Interface Reference Guide*.

7.24 Firewall Log

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Advance to *7.25 Internet Service*.

This section contains the calls for the Firewall Log entity.

Return to *7 Application Programming Interface Reference Guide*.

7.24.1 Get Firewall Logs

The Get Firewall Logs call returns information regarding the IP address of the server to which firewall logs are sent for an environment.

Live Specification Test Values

Condition	Outcome
environment = 2	External IP address
environment mod 5 = 0	Error: not found
environment = 99	Error: no access to environments

Request

```
GET http://{Terremark URI}/firewallLogs/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/firewallLogs/environments/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallLog
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<FirewallLog href="/firewallLogs/environments/{environment identifier}" name="{environment name}"
  type="application/vnd.tmrk.cloud.firewallLog" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/firewallLogs/environments/{environment identifier}" name="edit"/>

    <Action href="/firewallLogs/environments/{environment identifier}" name="remove"/>

  </Actions>

  <!-- Either an <IpAddress> or an <ExternalIpAddress> but not both -->

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"/>

  <ExternalIpAddress>

    <Address>{external IP address}</Address>

  </ExternalIpAddress>

</FirewallLog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 588
  Content-Type: application/vnd.tmrk.cloud.firewallLog
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 16:48:05 GMT

<FirewallLog href="/firewallLogs/environments/2" type="application/vnd.tmrk.cloud.firewallLog"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/2" name="My environment" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/firewallLogs/environments/2" name="edit"
      type="application/vnd.tmrk.cloud.firewallLog"/>

    <Action href="/firewallLogs/environments/2" name="remove"/>

  </Actions>
```

```
    <ExternalIpAddress>
      <Address>216.4.22.3</Address>
    </ExternalIpAddress>
  </FirewallLog>
```

Return to *7.24 Firewall Log*.

Return to *7 Application Programming Interface Reference Guide.*

7.24.2 Action Firewall Logs Create

The Action Firewall Logs Create call creates a destination address for the firewall log. This call is used when no addresses are currently assigned for firewall logs. If successful, the call returns the task that created the firewall log.

One of <IpAddress> or <ExternalAddress> is required. Presence of both is not permitted; presence of neither is not meaningful.

The `href` attribute of <IpAddress … > is required to identify the IP address to which to send the firewall logs.

Live Specification Test Values

Condition	Outcome
environment mod 5 = 0	Error: not found
environment = 99	Error: no access to environments

Request

```
  POST http://{Terremark URI}/firewallLogs/environments/{environment
    identifier}/action/createFirewallLog
```

EXAMPLE

```
  POST http://services.enterprisecloud.terremark.com/firewallLogs/environments/2/ …
    action/createFirewallLog
```

Body

```
  <FirewallLog>
    <!-- Either an <IpAddress> or an <ExternalIpAddress> but not both -->
    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}"/> <!-- Optional -->
    <ExternalIpAddress> <!-- Optional -->
      <Address>{external IP address}</Address>
    </ExternalIpAddress>
  </FirewallLog>
```

EXAMPLE

```
<FirewallLog>
  <ExternalIpAddress>
    <Address>216.4.22.3</Address>
  </ExternalIpAddress>
</FirewallLog>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.firewallLog
  Location: /firewallLogs/environments/{environment identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<FirewallLog href="/firewallLogs/environments/{environment identifier}" name="{environment name}"
  type="application/vnd.tmrk.cloud.firewallLog" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/firewallLogs/environments/{environment identifier}" name="edit"
      type="application/vnd.tmrk.cloud.firewallLog"/>
    <Action href="/firewallLogs/environments/{environment identifier}" name="remove"/>
  </Actions>
  <!-- Either an <IpAddress> or an <ExternalIpAddress> but not both -->
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"/>
  <ExternalIpAddress>
    <Address>{external IP address}</Address>
  </ExternalIpAddress>
</FirewallLog>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 588
  Content-Type: application/vnd.tmrk.cloud.firewallLog
  Location: /firewallLogs/environments/2
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 16:51:55 GMT
<FirewallLog href="/firewallLogs/environments/2" type="application/vnd.tmrk.cloud.firewallLog"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
```

```
    <Link href="/environments/2" name="My environment" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/firewallLogs/environments/2" name="edit"
      type="application/vnd.tmrk.cloud.firewallLog"/>
    <Action href="/firewallLogs/environments/2" name="remove"/>
  </Actions>
  <ExternalIpAddress>
    <Address>216.4.22.3</Address>
  </ExternalIpAddress>
</FirewallLog>
```

Return to *7.24 Firewall Log*.

Return to *7 Application Programming Interface Reference Guide*.

7.24.3 Action Firewall Logs Edit

The Action Firewall Logs Edit call edits the destination address for the firewall log. This call is used when an address is currently assigned for firewall logs. If successful, the call returns the task that modified the firewall log.

One of <IpAddress> or <ExternalAddress> is required. Presence of both is not permitted; presence of neither is not meaningful.

The `href` attribute of <IpAddress … > is required to identify the IP address to which to send the firewall logs.

Live Specification Test Values

Condition	Outcome
environment = 2	External IP address
environment mod 5 = 0	Error: not found
environment = 99	Error: no access to environments

Request

```
PUT http://{Terremark URI}/firewallLogs/environments/{environment identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/firewallLogs/environments/1
```

Body

```
<FirewallLog>
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}"/> <!-- Optional -->
```

```
  <ExternalIpAddress> <!-- Optional -->
    <Address>{external IP address}</Address>
  </ExternalIpAddress>
</FirewallLog>
```

EXAMPLE

```
<FirewallLog>
  <ExternalIpAddress>
    <Address>216.4.22.3</Address>
  </ExternalIpAddress>
</FirewallLog>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Firewall Log Host</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 498
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 19:28:36 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Firewall Log Host</Operation>
```

```
  <Status>Queued</Status>
  <ImpactedItem href="/firewallLogs/environments/1" type="application/vnd.tmrk.cloud.firewallLog"/>
  <StartTime>2011-06-16T19:28:36.7606704Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.24 Firewall Log*.

Return to *7 Application Programming Interface Reference Guide*.

7.24.4 Action Firewall Logs Remove

The Action Firewall Logs Remove call removes the destination address for the firewall log. This call is used when an address is currently assigned for firewall logs. If successful, the call returns the task that removed the firewall log.

Live Specification Test Values

Condition	Outcome
environment mod 5 = 0	Error: not found
environment = 99	Error: no access to environments

Request

```
DELETE http://{Terremark URI}/firewallLogs/environments/{environment identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/firewallLogs/environments/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Firewall Log</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>
```

```
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 500
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 19:32:17 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Firewall Log</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/firewallLogs/environments/1" type="application/vnd.tmrk.cloud.firewallLog"/>

  <StartTime>2011-06-16T19:32:17.8196704Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.24 Firewall Log*.

Return to *7 Application Programming Interface Reference Guide*.

7.25 Internet Service

7.25.1 Get Internet Services by ID 765

7.25.2 Action Internet Services Create 770

7.25.3 Action Internet Services Create for Environment 775

7.25.4 Action Internet Services Edit 778

7.25.5 Action Internet Services Remove 781

Advance to *7.26 Monitor*.

This section contains the calls for the Internet Service entity.

Return to *7 Application Programming Interface Reference Guide*.

7.25.1 Get Internet Services by ID

The Get Internet Services by ID call returns information regarding a specified Internet service defined in an environment.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

<LoadBalancingMethod> refers to the method used to balance the traffic across the nodes services in an Internet service. Permitted values are:

- **RoundRobin** – next packet goes to the next node in order
- **LeastConnection** – next packet goes to the node service with the fewest connections [default]
- **LeastResponseTime** – next packet goes to the node service with the lowest response time
- **LeastPackets** – next packet goes to the node service with the fewest received packets

Live Specification Test Values

Condition	Outcome
Internet service identifier = 99	Error: no access to Internet services
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 6 or 11	HTTP monitor
Internet service identifier = 3 or 7	ECV monitor
Internet service identifier = 4 or 8 or 12 or 14	Ping monitor
Internet service identifier = 5 or 13	Default Monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Condition	Outcome
Internet service identifier = 6 or 8 or 10 or 11 or 12	No node services
Internet service identifier mod 2	RoundRobin load balancer method
Internet service identifier mod 3	LeastResponseTime load balancer method
Internet service identifier mod 5	LeastPackets load balancer method
public IP address identifier = 99	Error: no access to public IPs

Request

```
GET http://{Terremark URI}/internetServices/{Internet service identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/internetServices/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.internetService
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
  name}" type="application/vnd.tmrk.cloud.internetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/publicIps/{public IP identifier}" name="{public IP address}"
      type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.internetService"/>

    <Action href="/nodeServices/internetServices/{Internet service
      identifier}/action/createNodeService" name="createNodeService"
      type="application/vnd.tmrk.cloud.createNodeService"/>

    <Action href="/internetServices/1" name="remove" actionDisabled="{noAccess | disabled}"/>

    <Action href="/internetServices/{Internet service identifier}/action/createEcvMonitor"
      name="createEcvMonitor" type="application/vnd.tmrk.cloud.createEcvMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createHttpMonitor"
      name="createHttpMonitor" type="application/vnd.tmrk.cloud.createHttpMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createPingMonitor"
      name="createPingMonitor" type="application/vnd.tmrk.cloud.createPingMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createDefaultMonitor"
```

```
    name="createDefaultMonitor"/>
  <Action href="/internetServices/{Internet service identifier}/action/createLoopbackMonitor"
    name="createLoopbackMonitor"/>
</Actions>
<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
    ⋮
  <TotalCount>{total number of tasks}</TotalCount>
</Tasks>
<Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
<Port>{port number of service, range of 1 to 65535}</Port>
<Enabled>{true | false}</Enabled>
<Description>{textual description}</Description>
<PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
  type="application/vnd.tmrk.cloud.publicIp"/>
<Persistence>
  <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>
  <Timeout>{persistence time in minutes}</Timeout>
</Persistence>
<RedirectUrl>{redirect URL}</RedirectUrl> <!-- Present only for HTTP -->
<TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
  network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
<BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
  name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"/>
<NodeServices>
  <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
    type="application/vnd.tmrk.cloud.nodeService">
    <Links>
```

```
      <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>

    </Links>

    <Actions>

      <Action href="/nodeServices/{node service identifier}" name="edit"
        type="application/vnd.tmrk.cloud.nodeService"/>

      <Action href="/nodeServices/{node service identifier}" name="remove"/>

    </Actions>

    <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
      address}" type="application/vnd.tmrk.cloud.ipAddress">

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network"/>

      <Host href="/networkHosts/{network host identifier}" name="{network host name}"
        type="application/vnd.tmrk.cloud.networkHost"/>

    </IpAddress>

    <Port>{port number of service, range of 1 to 65535}</Port>

    <Enabled>{true | false}</Enabled>

    <Description>This is a node service.</Description>

  </NodeService>

    ⋮

</NodeServices>

<LoadBalancingMethod>{RoundRobin | LeastConnection | LeastResponseTime |
  LeastPackets}</LoadBalancingMethod>

</InternetService>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3567
  Content-Type: application/vnd.tmrk.cloud.internetService
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 20:48:08 GMT

<InternetService href="/internetServices/1" name="Internet Service 1"
  type="application/vnd.tmrk.cloud.internetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/1" name="edit" type="application/vnd.tmrk.cloud.internetService"/>

    <Action href="/nodeServices/internetServices/1/action/createNodeService" name="createNodeService"
      type="application/vnd.tmrk.cloud.createNodeService"/>
```

```
    <Action href="/internetServices/1" name="remove" actionDisabled="disabled"/>
    <Action href="/internetServices/1/action/createEcvMonitor" name="createEcvMonitor"
      type="application/vnd.tmrk.cloud.createEcvMonitor"/>
    <Action href="/internetServices/1/action/createHttpMonitor" name="createHttpMonitor"
      type="application/vnd.tmrk.cloud.createHttpMonitor"/>
    <Action href="/internetServices/1/action/createPingMonitor" name="createPingMonitor"
      type="application/vnd.tmrk.cloud.createPingMonitor"/>
    <Action href="/internetServices/1/action/createDefaultMonitor" name="createDefaultMonitor"/>
    <Action href="/internetServices/1/action/createLoopbackMonitor" name="createLoopbackMonitor"/>
  </Actions>
  <Protocol>HTTP</Protocol>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <PublicIp href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp"/>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>5</Timeout>
  </Persistence>
  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
    type="application/vnd.tmrk.cloud.backupInternetService"/>
  <NodeServices>
    <NodeService href="/nodeServices/1" name="Node Service 1"
      type="application/vnd.tmrk.cloud.nodeService">
      <Links>
        <Link href="/internetServices/1" name="Internet Service 1"
          type="application/vnd.tmrk.cloud.internetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/1" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
```

```
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
    <NodeService href="/nodeServices/2" name="Node Service 2"
      type="application/vnd.tmrk.cloud.nodeService">
      <Links>
        <Link href="/internetServices/1" name="Internet Service 1"
          type="application/vnd.tmrk.cloud.internetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/2" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
  </NodeServices>
  <LoadBalancingMethod>LeastConnection</LoadBalancingMethod>
</InternetService>
```

Return to *7.25 Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.25.2 Action Internet Services Create

The Action Internet Services Create call creates an Internet service on a public IP address in an environment. If successful, the call returns information regarding the Internet service that was created.

The `name` attribute on <CreateInternetService … > is required.

Note: The name may not be that of another Internet service.

<Protocol> is required and permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Port> is required and must be in the range of 1 to 65535.

<Enabled> is required.

<LoadBalancingMethod> is optional and refers to the method used to balance the traffic across the nodes services in the Internet service. If not present, defaults to `LeastConnection`. Permitted values are:

- **RoundRobin** – next packet goes to the next node in order
- **LeastConnection** – next packet goes to the node service with the fewest connections [default]
- **LeastResponseTime** – next packet goes to the node service with the lowest response time
- **LeastPackets** – next packet goes to the node service with the fewest received packets

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

If <Timeout> is absent with <Type>SourceIp</Type>, then <Timeout> defaults to 2 minutes. Omit <Timeout> if <Type>none</Type>.

Note: The minimum value for <Timeout> is 2 (for two minutes) and the maximum is 5.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 99	Error: no access to Internet services
Internet service identifier mod 2	RoundRobin load balancer method
Internet service identifier mod 3	LeastResponseTime load balancer method
Internet service identifier mod 5	LeastPackets load balancer method
public IP address identifier = 99	Error: no access to public IPs

Request

```
POST http://{Terremark URI}/internetServices/publicIps/{public IP
  identifier}/action/createInternetService
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/publicIps/1/ …
  action/createInternetService
```

Body

```
<CreateInternetService name="{Internet service name}"> <!-- name required -->

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol> <!-- Required -->

  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Required -->

  <Enabled>{true | false}</Enabled> <!-- Required -->

  <Description>{textual description}</Description> <!-- Optional -->

  <Persistence> <!-- Required -->

    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type> <!-- Required -->

    <Timeout>{persistence time in minutes}</Timeout> <!-- Optional -->

  </Persistence>

  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Optional, available only for HTTP -->

  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
    network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/> <!-- Optional -->

  <BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
    name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"/>
    <!-- Optional -->

  <LoadBalancingMethod>{RoundRobin | LeastConnection | LeastResponseTime |
    LeastPackets}</LoadBalancingMethod> <!-- Optional -->

</CreateInternetService>
```

EXAMPLE

```
<CreateInternetService name="Internet Service 1">

  <Protocol>HTTP</Protocol>

  <Port>2020</Port>

  <Enabled>true</Enabled>

  <Description>Public Website</Description>

  <Persistence>

    <Type>SourceIp</Type>

    <Timeout>3</Timeout>

  </Persistence>

  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>

  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
```

```
  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
   type="application/vnd.tmrk.cloud.backupInternetService"/>

  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>

</CreateInternetService>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.internetService
  Location: /internetServices/{Internet service identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
  name}" type="application/vnd.tmrk.cloud.internetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/publicIps/{public IP identifier}" name="{public IP address}"
     type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}" name="edit"
     type="application/vnd.tmrk.cloud.internetService"/>

    <Action href="/nodeServices/internetServices/{Internet service
     identifier}/action/createNodeService" name="createNodeService"
     type="application/vnd.tmrk.cloud.createNodeService"/>

    <Action href="/internetServices/{Internet service identifier}" name="remove"
     actionDisabled="{noAccess | disabled}"/>

    <Action href="/internetServices/{Internet service identifier}/action/createEcvMonitor"
     name="createEcvMonitor" type="application/vnd.tmrk.cloud.createEcvMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createHttpMonitor"
     name="createHttpMonitor" type="application/vnd.tmrk.cloud.createHttpMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createPingMonitor"
     name="createPingMonitor" type="application/vnd.tmrk.cloud.createPingMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createDefaultMonitor"
     name="createDefaultMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/createLoopbackMonitor"
     name="createLoopbackMonitor"/>

  </Actions>

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

  <Port>{port number of service, range of 1 to 65535}</Port>

  <Enabled>{true | false}</Enabled>

  <Description>{textual description}</Description>

  <PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
   type="application/vnd.tmrk.cloud.publicIp"/>
```

```
    <Persistence>
      <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>
      <Timeout>{persistence time in minutes}</Timeout>
    </Persistence>
    <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Present only for HTTP -->
    <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
      network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    <BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
      name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"/>
    <LoadBalancingMethod>{RoundRobin | LeastConnection | LeastResponseTime |
      LeastPackets}</LoadBalancingMethod>
  </InternetService>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 1780
    Content-Type: application/vnd.tmrk.cloud.internetService
    Location: /internetServices/1
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 14 Jun 2011 21:05:53 GMT
  <InternetService href="/internetServices/1" name="Internet Service 1"
    type="application/vnd.tmrk.cloud.internetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/1" name="edit" type="application/vnd.tmrk.cloud.internetService"/>
      <Action href="/nodeServices/internetServices/1/action/createNodeService" name="createNodeService"
        type="application/vnd.tmrk.cloud.createNodeService"/>
      <Action href="/internetServices/1" name="remove" actionDisabled="disabled"/>
      <Action href="/internetServices/1/action/createEcvMonitor" name="createEcvMonitor"
        type="application/vnd.tmrk.cloud.createEcvMonitor"/>
      <Action href="/internetServices/1/action/createHttpMonitor" name="createHttpMonitor"
        type="application/vnd.tmrk.cloud.createHttpMonitor"/>
      <Action href="/internetServices/1/action/createPingMonitor" name="createPingMonitor"
        type="application/vnd.tmrk.cloud.createPingMonitor"/>
      <Action href="/internetServices/1/action/createDefaultMonitor" name="createDefaultMonitor"/>
      <Action href="/internetServices/1/action/createLoopbackMonitor" name="createLoopbackMonitor"/>
    </Actions>
    <Protocol>HTTP</Protocol>
    <Port>80</Port>
```

```
    <Enabled>true</Enabled>
    <Description>Public Website</Description>
    <PublicIp href="/publicIps/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.publicIp"/>
    <Persistence>
      <Type>SourceIp</Type>
      <Timeout>3</Timeout>
    </Persistence>
    <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
    <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
      type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
    <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
      type="application/vnd.tmrk.cloud.backupInternetService"/>
    <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
  </InternetService>
```

Return to *7.25 Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.25.3 Action Internet Services Create for Environment

The Action Internet Services Create for Environment call creates an Internet service in an environment. The call returns information regarding the Internet service created.

Note: This call is applicable to vCloud Express only.

The `name` attribute on <CreateInternetService … > is required.

Note: The name may not be that of another Internet service.

<Protocol> is required and permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Port> is required and must be in the range of 1 to 65535.

<Enabled> is required.

<LoadBalancingMethod> is optional and refers to the method used to balance the traffic across the nodes services in the Internet service. If not present, defaults to `LeastConnection`. Permitted values are:

- **RoundRobin** – next packet goes to the next node in order
- **LeastConnection** – next packet goes to the node service with the fewest connections [default]
- **LeastResponseTime** – next packet goes to the node service with the lowest response time
- **LeastPackets** – next packet goes to the node service with the fewest received packets

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

If <Timeout> is absent with <Type>SourceIp</Type>, then <Timeout> defaults to 2 minutes. Omit <Timeout> if <Type>none</Type>.

Note: The minimum value for <Timeout> is 2 (for two minutes) and the maximum is 5.

Request

```
POST http://{Terremark URI}/internetServices/environments/{environment
  identifier}/action/createInternetService
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/environments/1/ …
  action/createInternetService
```

Body

```
<CreateInternetService name="{Internet service name}"> <!-- name required -->
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol> <!-- Required -->
  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Persistence> <!-- Required -->
    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type> <!-- Required -->
    <Timeout>{persistence time in minutes}</Timeout> <!-- Optional -->
  </Persistence>
  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Optional, available only for HTTP -->
  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
    network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/> <!-- Optional -->
```

```
  <BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
   name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"/>
   <!-- Optional -->

  <LoadBalancingMethod>{RoundRobin | LeastConnection | LeastResponseTime |
   LeastPackets}</LoadBalancingMethod> <!-- Optional -->

</CreateInternetService>
```

EXAMPLE

```
<CreateInternetService name="Internet Service 1">

  <Protocol>HTTP</Protocol>

  <Port>2020</Port>

  <Enabled>true</Enabled>

  <Description>Public Website</Description>

  <Persistence>

    <Type>SourceIp</Type>

    <Timeout>3</Timeout>

  </Persistence>

  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>

  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
   type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>

  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
   type="application/vnd.tmrk.cloud.backupInternetService"/>

  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>

</CreateInternetService>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.error
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Error message="This operation is not supported by this service" majorErrorCode="501"
  minorErrorCode="OperationNotSupported"/>
```

EXAMPLE

```
HTTP/1.1 501 Not Implemented
  Content-Length: 126
  Content-Type: application/vnd.tmrk.cloud.error
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 03 Nov 2011 16:27:06 GMT

<Error message="This operation is not supported by this service" majorErrorCode="501"
  minorErrorCode="OperationNotSupported"/>
```

Return to *7.25 Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.25.4 Action Internet Services Edit

The Action Internet Services Edit call edits the name, source (any or a specific trusted network group), enablement, description, persistence, redirect URL, trusted network group, backup Internet service, or load balancing algorithm on a specified Internet service in an environment. If successful, the call returns the task that modified the Internet service.

The `name` attribute on <InternetService … > is required and may be changed.

Note: The name may not be changed to that of another Internet service.

<Port> is optional and ignored if present.

<Enabled> is required.

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

If <Timeout> is absent with <Type>SourceIp</Type>, then <Timeout> defaults to 2 minutes. Omit <Timeout> if <Type>none</Type>.

Note: The minimum value for <Timeout> is 2 (for two minutes) and the maximum is 5.

Both <TrustedNetworkGroup> and <BackupInternetService> are optional. Including a <TrustedNetworkGroup> or <BackupInternetService> not currently on the Internet service adds that trusted network group or backup Internet service to the Internet service.

Note: If any <TrustedNetworkGroup> is valued on the Internet service and not present in the call, that trusted network group is removed from the Internet service. Similarly, if any <BackupInternetService> is valued on the Internet service and not present in the call, that backup Internet service is removed from the Internet service.

<LoadBalancingMethod> is optional and refers to the method used to balance the traffic across the nodes services in the Internet service. If not present, no change is made. Permitted values are:

- **RoundRobin** – next packet goes to the next node in order

- **LeastConnection** – next packet goes to the node service with the fewest connections [default]
- **LeastResponseTime** – next packet goes to the node service with the lowest response time
- **LeastPackets** – next packet goes to the node service with the fewest received packets

Live Specification Test Values

Condition	Outcome
Internet service identifier = 99	Error: no access to Internet services
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 6 or 11	HTTP monitor
Internet service identifier = 3 or 7	ECV monitor
Internet service identifier = 4 or 8 or 12 or 14	Ping monitor
Internet service identifier = 5 or 13	Default Monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled
Internet service identifier = 6 or 8 or 10 or 11 or 12	No node services
Internet service identifier mod 2	RoundRobin load balancer method
Internet service identifier mod 3	LeastResponseTime load balancer method
Internet service identifier mod 5	LeastPackets load balancer method
public IP address identifier = 99	Error: no access to public IPs

Request

```
PUT http://{Terremark URI}/internetServices/{Internet service identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/internetServices/1
```

Body

```
<InternetService name="{Internet service name}"> <!-- name required -->
  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Optional -->
  <Enabled>{true | false}</Enabled>
  <Description>{textual description}</Description> <!-- Optional -->
  <Persistence> <!-- Required -->
    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type> <!-- Required -->
    <Timeout>{persistence time in minutes}</Timeout> <!-- Optional -->
  </Persistence>
  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Optional, available only for HTTP -->
  <TrustedNetworkGroup href="/trustedNetworkGroups/{trusted network group identifier}" name="{trusted
    network group name}" type="application/vnd.tmrk.cloud.trustedNetworkGroup"/> <!-- Optional -->
  <BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
    name="{backup Internet service name}"
```

```
    type="application/vnd.tmrk.cloud.backupInternetService"/> <!-- Optional -->
  <LoadBalancingMethod>{RoundRobin | LeastConnection | LeastResponseTime |
    LeastPackets}</LoadBalancingMethod> <!-- Optional -->
</InternetService>
```

EXAMPLE

```
<InternetService name="Internet Service 1">
  <Port>8080</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
  <TrustedNetworkGroup href="/trustedNetworkGroups/57" name="My Trusted Networks"
    type="application/vnd.tmrk.cloud.trustedNetworkGroup"/>
  <BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
    type="application/vnd.tmrk.cloud.backupInternetService"/>
  <LoadBalancingMethod>LeastConnection</LoadBalancingMethod>
</InternetService>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Configure Internet Service</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
  <Notes>{notes on action}</Notes>
  <ErrorMessage>{error message}</ErrorMessage>
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>
```

```
</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 21:51:03 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Internet Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-14T21:51:03.100038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.25 Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.25.5 Action Internet Services Remove

The Action Internet Services Remove call removes an Internet service from an environment. If successful, the call returns the task that removed the Internet service.

Note: The Internet service must have no node services associated to remove.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 99	Error: no access to Internet services
Internet service identifier = 6 or 8 or 10 or 11 or 12	No node services
Internet service identifier mod 2	RoundRobin load balancer method
Internet service identifier mod 3	LeastResponseTime load balancer method
Internet service identifier mod 5	LeastPackets load balancer method
public IP address identifier = 99	Error: no access to public IPs

Request

```
DELETE http://{Terremark URI}/internetServices/{Internet service identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/internetServices/6
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Internet Service</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 18:38:03 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Internet Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/internetServices/6" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-15T18:38:03.0715083Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.25 Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.26 Monitor

7.26.1 Get Monitors by Internet Service 783

7.26.2 Action Monitors Create Default 790

7.26.3 Action Monitors Create Ping 792

7.26.4 Action Monitors Create HTTP 794

7.26.5 Action Monitors Create ECV 798

7.26.6 Action Monitors Create Loopback 801

7.26.7 Action Monitors Edit Ping 802

7.26.8 Action Monitors Edit HTTP 804

7.26.9 Action Monitors Edit ECV 808

7.26.10 Action Monitors Enable 811

7.26.11 Action Monitors Disable 813

Advance to *7.27 Backup Internet Service*.

This section contains the calls for the Monitor entity.

Return to *7 Application Programming Interface Reference Guide*.

7.26.1 Get Monitors by Internet Service

The Get Monitors by Internet Service call returns information regarding a specified Internet service defined in an environment.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 6 or 11	HTTP monitor
Internet service identifier = 3 or 7	ECV monitor
Internet service identifier = 4 or 8 or 12 or 14	Ping monitor
Internet service identifier = 5 or 13	Default Monitor
Internet service identifier = 15	Loopback Monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
GET http://{Terremark URI}/internetServices/{Internet service identifier}/monitor
```

EXAMPLE

Default monitor:

```
GET http://services.enterprisecloud.terremark.com/internetServices/5/monitor
```

Ping monitor:

```
GET http://services.enterprisecloud.terremark.com/internetServices/4/monitor
```

HTTP monitor:

```
GET http://services.enterprisecloud.terremark.com/internetServices/2/monitor
```

ECV monitor:

```
GET http://services.enterprisecloud.terremark.com/internetServices/3/monitor
```

Loopback monitor:

```
GET http://services.enterprisecloud.terremark.com/internetServices/15/monitor
```

Body

none

Response

Default monitor:

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.defaultMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DefaultMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.defaultMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions/>

</DefaultMonitor>
```

Ping monitor:

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<PingMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.pingMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}/monitor?type=ping" name="edit"
      type="application/vnd.tmrk.cloud.pingMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>

    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>

  </Actions>

  <Interval>{interval between probes in seconds}</Interval>

  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>

  <Retries>{count of retries}</Retries>

  <Downtime>{downtime in seconds}</Downtime>

  <Enabled>{true | false}</Enabled>

</PingMonitor>
```

HTTP monitor:

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.httpMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<HttpMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.httpMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}/monitor?type=http" name="edit"
      type="application/vnd.tmrk.cloud.httpMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable"/>

    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor" name="enable"
```

```
      actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <Interval>{interval between probes in seconds}</Interval>
    <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
    <Retries>{count of retries}</Retries>
    <Downtime>{downtime in seconds}</Downtime>
    <Enabled>{true | false}</Enabled>
    <RequestUri>{URI for HEAD request}</RequestUri>
    <HttpHeaders>{HTTP headers}</HttpHeaders>
    <ResponseCodes>
      <ResponseCode>{HTTP response code}</ResponseCode>
      ⋮
    </ResponseCodes>
  </HttpMonitor>
```

ECV monitor:

```
  HTTP/1.1 200 OK
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.ecvMonitor
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
  <EcvMonitor href="/internetServices/{Internet service identifier}/monitor"
    type="application/vnd.tmrk.cloud.ecvMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/{Internet service identifier}/monitor?type=ecv" name="edit"
        type="application/vnd.tmrk.cloud.ecvMonitor"/>
      <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
        name="disable" actionDisabled="{noAccess | disabled}"/>
      <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
        name="enable"/>
    </Actions>
    <Interval>{interval between probes in seconds}</Interval>
    <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
    <Retries>{count of retries}</Retries>
```

```
  <Downtime>{downtime in seconds}</Downtime>
  <Enabled>{true | false}</Enabled>
  <SendString>{complete HTTP request}</SendString>
  <HttpHeaders>{HTTP headers}</HttpHeaders>
  <ReceiveString>{scan text}</ReceiveString>
</EcvMonitor>
```

Loopback monitor:

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.loopbackMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<LoopbackMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.loopbackMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions/>
</LoopbackMonitor>
```

EXAMPLE

Default monitor:

```
HTTP/1.1 200 OK
  Content-Length: 646
  Content-Type: application/vnd.tmrk.cloud.loopbackMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:52:05 GMT
<DefaultMonitor href="/internetServices/5/monitor" type="application/vnd.tmrk.cloud.loopbackMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/5" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions/>
</DefaultMonitor>
```

Ping monitor:

```
HTTP/1.1 200 OK
  Content-Length: 861
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:50:43 GMT

<PingMonitor href="/internetServices/4/monitor" type="application/vnd.tmrk.cloud.pingMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/4" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/4/monitor?type=ping" name="edit"
      type="application/vnd.tmrk.cloud.pingMonitor"/>

    <Action href="/internetServices/4/action/disableMonitor" name="disable"
      actionDisabled="disabled"/>

    <Action href="/internetServices/4/action/enableMonitor" name="enable"/>

  </Actions>

  <Interval>5</Interval>

  <ResponseTimeout>2</ResponseTimeout>

  <Retries>3</Retries>

  <Downtime>30</Downtime>

  <Enabled>true</Enabled>

</PingMonitor>
```

HTTP monitor:

```
HTTP/1.1 200 OK
  Content-Length: 1047
  Content-Type: application/vnd.tmrk.cloud.httpMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 21 Jun 2011 16:23:28 GMT

<HttpMonitor href="/internetServices/2/monitor" type="application/vnd.tmrk.cloud.httpMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/2" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>
```

```
  <Actions>
    <Action href="/internetServices/2/monitor?type=http" name="edit"
      type="application/vnd.tmrk.cloud.httpMonitor"/>
    <Action href="/internetServices/2/action/disableMonitor" name="disable"/>
    <Action href="/internetServices/2/action/enableMonitor" name="enable" actionDisabled="disabled"/>
  </Actions>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <RequestUri>/</RequestUri>
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ResponseCodes>
    <ResponseCode>200</ResponseCode>
    <ResponseCode>201</ResponseCode>
    <ResponseCode>202</ResponseCode>
  </ResponseCodes>
</HttpMonitor>
```

ECV monitor:

```
HTTP/1.1 200 OK
  Content-Length: 962
  Content-Type: application/vnd.tmrk.cloud.ecvMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:47:15 GMT
<EcvMonitor href="/internetServices/3/monitor" type="application/vnd.tmrk.cloud.ecvMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/3" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/3/monitor?type=ecv" name="edit"
      type="application/vnd.tmrk.cloud.ecvMonitor"/>
    <Action href="/internetServices/3/action/disableMonitor" name="disable"
      actionDisabled="disabled"/>
    <Action href="/internetServices/3/action/enableMonitor" name="enable"/>
```

```
  </Actions>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <SendString>GET /</SendString>
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ReceiveString>OK</ReceiveString>
</EcvMonitor>
```

Loopback monitor:

```
HTTP/1.1 200 OK
  Content-Length: 646
  Content-Type: application/vnd.tmrk.cloud.loopbackMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:52:05 GMT
<LoopbackMonitor href="/internetServices/15/monitor"
  type="application/vnd.tmrk.cloud.loopbackMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/internetServices/15" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions/>
</LoopbackMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.2 Action Monitors Create Default

The Action Monitors Create Default call creates a default monitor on a specified Internet service in an environment. A default monitor periodically probes with a TCP SYN message and expects a SYN-ACK response to verify that the node service remains available. If successful, the call returns information regarding the monitor that was created.

Creating a default monitor is equivalent to deleting the monitor in the Infinicenter Console.

Request

```
POST http://{Terremark URI}/internetServices/{Internet service
```

```
identifier}/action/createDefaultMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/2/action/createDefaultMonitor
```

Body

```
none
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.defaultMonitor
  Location: /internetServices/{Internet services identifier}/monitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<DefaultMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.defaultMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

</DefaultMonitor>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 316
  Content-Type: application/vnd.tmrk.cloud.defaultMonitor
  Location: /internetServices/1/monitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:54:48 GMT

<DefaultMonitor href="/internetServices/1/monitor" type="application/vnd.tmrk.cloud.defaultMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

</DefaultMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.3 Action Monitors Create Ping

The Action Monitors Create Ping call creates a ping monitor on a specified Internet service in an environment. A ping monitor periodically probes each node service on the Internet service with an ICMP echo request and expects an ICMP echo reply in response to verify that the node service remains available. If successful, the call returns information regarding the monitor that was created.

Note: If an Internet service currently has a custom monitor, the default monitor must first be created on the Internet service and then the ping monitor created.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required.

Request

```
POST http://{Terremark URI}/internetServices/{Internet service identifier}/action/createPingMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/1/action/createPingMonitor
```

Body

```
<CreatePingMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
</CreatePingMonitor>
```

EXAMPLE

```
<CreatePingMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
```

```
  <Retries>3</Retries>

  <Downtime>30</Downtime>

  <Enabled>true</Enabled>

</CreatePingMonitor>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  Location: /internetServices/{Internet service identifier}/monitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PingMonitor href="/internetServices/{Internet service identifier}/monitor?type=ping"
  type="application/vnd.tmrk.cloud.pingMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}/monitor?type=ping" name="edit"
      type="application/vnd.tmrk.cloud.pingMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>

    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>

  </Actions>

  <Interval>{interval between probes in seconds}</Interval>

  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>

  <Retries>{count of retries}</Retries>

  <Downtime>{downtime in seconds}</Downtime>

  <Enabled>{true | false}</Enabled>

</PingMonitor>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 752
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  Location: /internetServices/1/monitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 18:12:23 GMT

<PingMonitor href="/internetServices/1/monitor" type="application/vnd.tmrk.cloud.pingMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <Links>
      <Link href="/internetServices/1" name="Internet Service 1"
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/1/monitor?type=ping" name="edit"
        type="application/vnd.tmrk.cloud.pingMonitor"/>
      <Action href="/internetServices/1/action/disableMonitor" name="disable"
        actionDisabled="disabled"/>
      <Action href="/internetServices/1/action/enableMonitor" name="enable"/>
    </Actions>
    <Interval>5</Interval>
    <ResponseTimeout>2</ResponseTimeout>
    <Retries>3</Retries>
    <Downtime>30</Downtime>
    <Enabled>true</Enabled>
  </PingMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.4 Action Monitors Create HTTP

The Action Monitors Create HTTP call creates a hypertext transport protocol (HTTP) monitor on a specified Internet service in an environment. An HTTP monitor periodically probes each node service on the Internet service with an HTTP HEAD request and expects an HTTP response to verify that the node service remains available. IIS can be configured to send a different response to a HEAD request or none at all; a suitable response should be agreed with the web server administrator before setting up the monitor. If successful, the call returns information regarding the monitor that was created.

Note: If an Internet service currently has a custom monitor, the default monitor must first be created on the Internet service and then the HTTP monitor created.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required.

<RequestUri> is required and can be any HTTP request. A HEAD method is recommended; server overhead is reduced because only the headers are returned. The default is `HEAD /`.

At least one <ResponseCode> is required and any HTTP response code is permitted. The default is 200.

<HttpHeaders> is optional and may include more than one header as required by the Web site.

Request

```
POST http://{Terremark URI}/internetServices/{Internet service identifier}/action/createHttpMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/1/action/createHttpMonitor
```

Body

```
<CreateHttpMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <RequestUri>{URL for HEAD request}</RequestUri> <!-- Required -->
  <HttpHeaders>Host: mysite.com</HttpHeaders> <!-- Optional -->
  <ResponseCodes>
    <ResponseCode>{HTTP response code}</ResponseCode> <!-- Required -->
      ⋮
  </ResponseCodes>
</CreateHttpMonitor>
```

EXAMPLE

```
<CreateHttpMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <RequestUri>/</RequestUri>
```

```
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ResponseCodes>
    <ResponseCode>200</ResponseCode>
    <ResponseCode>201</ResponseCode>
    <ResponseCode>202</ResponseCode>
  </ResponseCodes>
</CreateHttpMonitor>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.httpMonitor
  Location: /internetServices/{Internet service identifier}/monitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<HttpMonitor href="/internetServices/{Internet service identifier}/monitor?type=http"
  type="application/vnd.tmrk.cloud.httpMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/{Internet service identifier}/monitor?type=http" name="edit"
      type="application/vnd.tmrk.cloud.httpMonitor"/>
    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>
    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>
  </Actions>
  <Interval>{interval between probes in seconds}</Interval>
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
  <Retries>{count of retries}</Retries>
  <Downtime>{downtime in seconds}</Downtime>
  <Enabled>{true | false}</Enabled>
  <RequestUri>{URI for HEAD request}</RequestUri>
  <HttpHeaders>{HTTP headers}</HttpHeaders>
  <ResponseCodes>
    <ResponseCode>{HTTP response code}</ResponseCode>
      ⋮
  </ResponseCodes>
```

```
</HttpMonitor>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 962
  Content-Type: application/vnd.tmrk.cloud.httpMonitor
  Location: /internetServices/1/monitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 18:15:10 GMT

<HttpMonitor href="/internetServices/1/monitor" type="application/vnd.tmrk.cloud.httpMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/1/monitor?type=http" name="edit"
      type="application/vnd.tmrk.cloud.httpMonitor"/>

    <Action href="/internetServices/1/action/disableMonitor" name="disable"
      actionDisabled="disabled"/>

    <Action href="/internetServices/1/action/enableMonitor" name="enable"/>

  </Actions>

  <Interval>5</Interval>

  <ResponseTimeout>2</ResponseTimeout>

  <Retries>3</Retries>

  <Downtime>30</Downtime>

  <Enabled>true</Enabled>

  <RequestUri>/</RequestUri>

  <HttpHeaders>Host: mysite.com</HttpHeaders>

  <ResponseCodes>

    <ResponseCode>200</ResponseCode>

    <ResponseCode>201</ResponseCode>

    <ResponseCode>202</ResponseCode>

  </ResponseCodes>

</HttpMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.5 Action Monitors Create ECV

The Action Monitors Create ECV call creates an HTTP Extended Content Verification (ECV) monitor on a specified Internet service in an environment. An ECV monitor periodically probes each node service on the Internet service with an HTTP GET request. The response is scanned, within the first 24KB, for a specific string to verify that the node service remains available. IIS can be configured to send a different response to a HEAD request or none at all; a suitable response should be agreed with the web server administrator before setting up the monitor. If successful, the call returns information regarding the monitor that was created.

Note: The ECV monitor may only be created on Internet services with a protocol of HTTP.

Note: If an Internet service currently has a custom monitor, the default monitor must first be created on the Internet service and then the ECV monitor created.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required.

<SendString> is required and can be any HTTP request. The default is `GET /`.

<HttpHeaders> is optional and may include more than one header as required by the Web site.

<ReceiveString> is required and contains the string for which the response will be scanned.

Note: Only the first 24KB of the response is scanned for the receive string.

Request

```
POST http://{Terremark URI}/internetServices/{Internet service identifier}/action/createEcvMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/1/action/createEcvMonitor
```

Body

```
<CreateEcvMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
```

```
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <SendString>{complete HTTP request}</SendString> <!-- Required -->
  <HttpHeaders>{HTTP headers}</HttpHeaders> <!-- Optional -->
  <ReceiveString>{scan text}</ReceiveString> <!-- Required -->
</CreateEcvMonitor>
```

EXAMPLE

```
<CreateEcvMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <SendString>GET /</SendString>
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ReceiveString>OK</ReceiveString>
</CreateEcvMonitor>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.ecvMonitor
  Location: /internetServices/{Internet service identifier}/monitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<EcvMonitor href="/internetServices/{Internet service identifier}/monitor?type=ecv"
  type="application/vnd.tmrk.cloud.ecvMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/{Internet service identifier}/monitor?type=ecv" name="edit"
      type="application/vnd.tmrk.cloud.ecvMonitor"/>
    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>
    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>
```

```
    </Actions>
    <Interval>{interval between probes in seconds}</Interval>
    <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
    <Retries>{count of retries}</Retries>
    <Downtime>{downtime in seconds}</Downtime>
    <Enabled>{true | false}</Enabled>
    <SendString>{complete HTTP request}</SendString>
    <HttpHeaders>{HTTP headers}</HttpHeaders> <!-- Optional -->
    <ReceiveString>{scan text}</ReceiveString> <!-- Required -->
  </EcvMonitor>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 859
    Content-Type: application/vnd.tmrk.cloud.ecvMonitor
    Location: /internetServices/1/monitor
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 08 Jul 2011 18:17:11 GMT
  <EcvMonitor href="/internetServices/1/monitor" type="application/vnd.tmrk.cloud.ecvMonitor"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/internetServices/1" name="Internet Service 1"
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/1/monitor?type=ecv" name="edit"
        type="application/vnd.tmrk.cloud.ecvMonitor"/>
      <Action href="/internetServices/1/action/disableMonitor" name="disable"
        actionDisabled="disabled"/>
      <Action href="/internetServices/1/action/enableMonitor" name="enable"/>
    </Actions>
    <Interval>5</Interval>
    <ResponseTimeout>2</ResponseTimeout>
    <Retries>3</Retries>
    <Downtime>30</Downtime>
    <Enabled>true</Enabled>
    <SendString>GET /</SendString>
    <HttpHeaders>Host: mysite.com</HttpHeaders>
    <ReceiveString>OK</ReceiveString>
  </EcvMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.6 Action Monitors Create Loopback

The Action Monitors Create loopback call creates a loopback monitor on a specified Internet service in an environment. A loopback monitor periodically probes its loopback address with an ICMP echo request and expects an echo reply. This monitor does not probe the servers on the Internet service and therefore does not ensure the availability of the service. If successful, the call returns information regarding the monitor that was created.

Note: Use of this monitor is not recommended.

Request

```
POST http://{Terremark URI}/internetServices/{Internet service
  identifier}/action/createLoopbackMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/1/action/createLoopbackMonitor
```

Body

none

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.loopbackMonitor
  Location: /internetServices/{Internet services identifier}/monitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<LoopbackMonitor href="/internetServices/{Internet service identifier}/monitor"
  type="application/vnd.tmrk.cloud.loopbackMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

</LoopbackMonitor>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 319
  Content-Type: application/vnd.tmrk.cloud.loopbackMonitor
  Location: /internetServices/1/monitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 17:54:48 GMT
```

```
<LoopbackMonitor href="/internetServices/1/monitor" type="application/vnd.tmrk.cloud.loopbackMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

</LoopbackMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.7 Action Monitors Edit Ping

The Action Monitors Edit Ping call edits a ping monitor on a specified Internet service in an environment. A ping monitor periodically probes each node service on the Internet service with an ICMP echo request and expects an echo reply to verify that the node service remains available. If successful, the call returns information regarding the monitor that was modified.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required but ignored. Use **Action Monitors Enable** and **Action Monitors Disable** to change.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 4 or 8 or 12 or 14	Ping monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
PUT http://{Terremark URI}/internetServices/{Internet service identifier}/monitor?type=ping
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/internetServices/4/monitor?type=ping
```

Body

```
<PingMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required but ignored -->
</PingMonitor>
```

EXAMPLE

```
<PingMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
</PingMonitor>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PingMonitor href="/internetServices/1/monitor?type=ping"
  type="application/vnd.tmrk.cloud.pingMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/{Internet service identifier}/monitor?type=ping" name="edit"
      type="application/vnd.tmrk.cloud.pingMonitor"/>
    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>
    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>
  </Actions>
  <Interval>{interval between probes in seconds}</Interval>
```

```
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
  <Retries>{count of retries}</Retries>
  <Downtime>{downtime in seconds}</Downtime>
  <Enabled>{true | false}</Enabled>
</PingMonitor>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 752
  Content-Type: application/vnd.tmrk.cloud.pingMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 18:31:43 GMT
<PingMonitor href="/internetServices/4/monitor" type="application/vnd.tmrk.cloud.pingMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/4" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/internetServices/4/monitor?type=ping" name="edit"
      type="application/vnd.tmrk.cloud.pingMonitor"/>
    <Action href="/internetServices/4/action/disableMonitor" name="disable"
      actionDisabled="disabled"/>
    <Action href="/internetServices/4/action/enableMonitor" name="enable"/>
  </Actions>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
</PingMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.8 Action Monitors Edit HTTP

The Action Monitors Edit HTTP call edits a hypertext transport protocol (HTTP) monitor on a specified Internet service in an environment. An HTTP monitor periodically probes each node service on the Internet service with an HTTP HEAD request and expects an HTTP response to verify that the node service remains available. IIS can be configured to send a different response to a HEAD request or none at all; a suitable response should be agreed

with the web server administrator before setting up the monitor. If successful, the call returns information regarding the monitor that was modified.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required but ignored. Use **Action Monitors Enable** and **Action Monitors Disable** to change.

<RequestUri> is required and can be any HTTP request. A HEAD method is recommended; server overhead is reduced because only the headers are returned. The default is `HEAD /`.

At least one <ResponseCode> is required and any HTTP response code is permitted.

<HttpHeaders> is optional and may include more than one header as required by the Web site.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 6 or 11	HTTP monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
PUT http://{Terremark URI}/internetServices/{Internet service identifier}/monitor?type=http
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/internetServices/2/monitor?type=http
```

Body

```
<HttpMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
```

```
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required but ignored -->
  <RequestUri>{URI for HEAD request}</RequestUri> <!-- Required -->
  <HttpHeaders>Host: mysite.com</HttpHeaders> <!-- Optional -->
  <ResponseCodes>
    <ResponseCode>{HTTP response code}</ResponseCode> <!-- Required -->
      ⋮
  </ResponseCodes>
</HttpMonitor>
```

EXAMPLE

```
<HttpMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <RequestUri>/</RequestUri>
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ResponseCodes>
    <ResponseCode>200</ResponseCode>
    <ResponseCode>201</ResponseCode>
    <ResponseCode>202</ResponseCode>
  </ResponseCodes>
</HttpMonitor>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.httpMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<HttpMonitor href="/internetServices/{Internet service identifier}/monitor?type=http"
  type="application/vnd.tmrk.cloud.httpMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
```

```
    <Actions>
      <Action href="/internetServices/{Internet service identifier}/monitor?type=http" name="edit"
        type="application/vnd.tmrk.cloud.httpMonitor"/>
      <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
        name="disable"/>
      <Action href="/internetServices/{Internet service identifier}/action/enableMonitor" name="enable"
        actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <Interval>{interval between probes in seconds}</Interval>
    <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>
    <Retries>{count of retries}</Retries>
    <Downtime>{downtime in seconds}</Downtime>
    <Enabled>{true | false}</Enabled>
    <RequestUri>{URI for HEAD request}</RequestUri>
    <HttpHeaders>{HTTP headers}</HttpHeaders>
    <ResponseCodes>
      <ResponseCode>{HTTP response code}</ResponseCode>
        ⋮
    </ResponseCodes>
  </HttpMonitor>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 962
    Content-Type: application/vnd.tmrk.cloud.httpMonitor
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 08 Jul 2011 18:37:19 GMT
  <HttpMonitor href="/internetServices/2/monitor" type="application/vnd.tmrk.cloud.httpMonitor"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/internetServices/2" name="Internet Service 1"
        type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/2/monitor?type=http" name="edit"
        type="application/vnd.tmrk.cloud.httpMonitor"/>
      <Action href="/internetServices/2/action/disableMonitor" name="disable"/>
      <Action href="/internetServices/2/action/enableMonitor" name="enable" actionDisabled="disabled"/>
    </Actions>
    <Interval>5</Interval>
```

```
    <ResponseTimeout>2</ResponseTimeout>
    <Retries>3</Retries>
    <Downtime>30</Downtime>
    <Enabled>true</Enabled>
    <RequestUri>/</RequestUri>
    <HttpHeaders>Host: mysite.com</HttpHeaders>
    <ResponseCodes>
      <ResponseCode>200</ResponseCode>
      <ResponseCode>201</ResponseCode>
      <ResponseCode>202</ResponseCode>
    </ResponseCodes>
  </HttpMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.9 Action Monitors Edit ECV

The Action Monitors Edit ECV call edits an HTTP Extended Content Verification (ECV) monitor on a specified Internet service in an environment. An ECV monitor periodically probes each node service on the Internet service with an HTTP GET request. The response is scanned, within the first 24KB, for a specific string to verify that the node service remains available. IIS can be configured to send a different response to a HEAD request or none at all; a suitable response should be agreed with the web server administrator before setting up the monitor. If successful, the call returns information regarding the monitor that was modified.

<Interval> is required and is the time in seconds between probes of a node service. The default value is five seconds.

<ResponseTimeout> is required and is the time the monitor waits for a response from the node service. The default value is two seconds.

<Retries> is required and is the number of times the monitor will probe the node service before marking as down. The default value is 3 probes.

<Downtime> is required and is the time in seconds the monitor waits before resuming probes to attempt a connection to a down node service. The default value is thirty seconds.

<Enable> is required but ignored. Use **Action Monitors Enable** and **Action Monitors Disable** to change.

<SendString> is required and can be any HTTP request. The default is `GET /`.

<HttpHeaders> is optional and may include more than one header as required by the Web site.

<ReceiveString> is required and contains the string for which the response will be scanned.

Note: Only the first 24KB of the response is scanned for the receive string.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 3 or 7	ECV monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
PUT http://{Terremark URI}/internetServices/{Internet service identifier}/monitor?type=ecv
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/internetServices/3/monitor?type=ecv
```

Body

```
<EcvMonitor>
  <Interval>{interval between probes in seconds}</Interval> <!-- Required -->
  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout> <!-- Required -->
  <Retries>{count of retries}</Retries> <!-- Required -->
  <Downtime>{downtime in seconds}</Downtime> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required but ignored -->
  <SendString>{complete HTTP request}</SendString> <!-- Required -->
  <HttpHeaders>{HTTP headers}</HttpHeaders> <!-- Optional -->
  <ReceiveString>{scan text}</ReceiveString> <!-- Required -->
</EcvMonitor>
```

EXAMPLE

```
<EcvMonitor>
  <Interval>5</Interval>
  <ResponseTimeout>2</ResponseTimeout>
  <Retries>3</Retries>
  <Downtime>30</Downtime>
  <Enabled>true</Enabled>
  <SendString>GET /</SendString>
  <HttpHeaders>Host: mysite.com</HttpHeaders>
  <ReceiveString>OK</ReceiveString>
```

```
</EcvMonitor>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.ecvMonitor
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<EcvMonitor href="/internetServices/{Internet service identifier}/monitor?type=ecv"
  type="application/vnd.tmrk.cloud.ecvMonitor" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/internetServices/{Internet service identifier}/monitor?type=ecv" name="edit"
      type="application/vnd.tmrk.cloud.ecvMonitor"/>

    <Action href="/internetServices/{Internet service identifier}/action/disableMonitor"
      name="disable" actionDisabled="{noAccess | disabled}"/>

    <Action href="/internetServices/{Internet service identifier}/action/enableMonitor"
      name="enable"/>

  </Actions>

  <Interval>{interval between probes in seconds}</Interval>

  <ResponseTimeout>{wait time for response in seconds}</ResponseTimeout>

  <Retries>{count of retries}</Retries>

  <Downtime>{downtime in seconds}</Downtime>

  <Enabled>{true | false}</Enabled>

  <SendString>{complete HTTP request}</SendString>

  <HttpHeaders>{HTTP headers}</HttpHeaders> <!-- Optional -->

  <ReceiveString>{scan text}</ReceiveString> <!-- Required -->

</EcvMonitor>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 859
  Content-Type: application/vnd.tmrk.cloud.ecvMonitor
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 18:41:11 GMT

<EcvMonitor href="/internetServices/3/monitor" type="application/vnd.tmrk.cloud.ecvMonitor"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/3" name="Internet Service 1"
```

```
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
    </Links>
    <Actions>
      <Action href="/internetServices/3/monitor?type=ecv" name="edit"
        type="application/vnd.tmrk.cloud.ecvMonitor"/>
      <Action href="/internetServices/3/action/disableMonitor" name="disable"
        actionDisabled="disabled"/>
      <Action href="/internetServices/3/action/enableMonitor" name="enable"/>
    </Actions>
    <Interval>5</Interval>
    <ResponseTimeout>2</ResponseTimeout>
    <Retries>3</Retries>
    <Downtime>30</Downtime>
    <Enabled>true</Enabled>
    <SendString>GET /</SendString>
    <HttpHeaders>Host: mysite.com</HttpHeaders>
    <ReceiveString>OK</ReceiveString>
  </EcvMonitor>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.10 Action Monitors Enable

The Action Monitors Enable call enables a monitor on a specified Internet service in an environment. A monitor periodically probes each node service on the Internet service to verify that it remains available. If successful, the call returns the task that enabled the monitor.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
POST http://{Terremark URI}/internetServices/{Internet service identifier}/action/enableMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/3/action/enableMonitor
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Internet Service Monitor</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 504
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 23:20:34 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Enable Internet Service Monitor</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-14T23:20:34.046038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.26.11 Action Monitors Disable

The Action Monitors Disable call disables a monitor on a specified Internet service in an environment. A monitor periodically probes each node service on the Internet service to verify that it remains available. If successful, the call returns the task that disabled the monitor.

Live Specification Test Values

Condition	Outcome
Internet service identifier = 1	No monitor
Internet service identifier = 2 or 5 or 7 or 8 or 9 or 11 or 12 or 13	Monitor enabled

Request

```
POST http://{Terremark URI}/internetServices/{Internet service identifier}/action/disableMonitor
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/internetServices/2/action/disableMonitor
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Disable Internet Service Monitor</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 504
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 23:26:23 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Disable Internet Service Monitor</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-14T23:26:23.745038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.26 Monitor*.

Return to *7 Application Programming Interface Reference Guide*.

7.27 Backup Internet Service

7.27.1 Get Backup Internet Services 814

7.27.2 Get Backup Internet Services by ID 821

7.27.3 Action Backup Internet Services Create 826

7.27.4 Action Backup Internet Services Edit 829

7.27.5 Action Backup Internet Services Remove 832

Advance to *7.28 RNAT*.

This section contains the calls for the Backup Internet Service entity.

Return to *7 Application Programming Interface Reference Guide*.

7.27.1 Get Backup Internet Services

The Get Backup Internet Services call returns information regarding backup Internet services defined in an environment.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.

- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

Request

```
GET http://{Terremark URI}/backupInternetServices/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/backupInternetServices/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.backupInternetService; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BackupInternetServices href="/backupInternetServices/environments/{environment identifier}"
  type="application/vnd.tmrk.cloud.backupInternetService; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
    name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService">

    <Links>

      <Link href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" rel="up"/>

    </Links>

    <Actions>
```

```
    <Action href="/backupInternetServices/{backup Internet service identifier}" name="edit"
     type="application/vnd.tmrk.cloud.createBackupInternetService"/>

    <Action href="/nodeServices/backupInternetServices/{backup Internet service
     identifier}/action/createNodeService" name="createNodeService"
     type="application/vnd.tmrk.cloud.createNodeService"/>

    <Action href="/backupInternetServices/1" name="remove" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>

      <Status>{Queued | Running | Failed | Success | Error}</Status>

      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
       item acted upon}"/>

      <StartTime>{time action started}</StartTime>

      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running --
       >

      <Notes>{notes on action}</Notes>

      <ErrorMessage>{error message}</ErrorMessage>

      <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
       type="application/vnd.tmrk.cloud.admin.user"/>

    </Task>

      ⋮

    <TotalCount>{total number of tasks}</TotalCount>

  </Tasks>

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

  <Enabled>{true | false}</Enabled>

  <Description>{textual description}</Description>

  <Persistence>

    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>

    <Timeout>{persistence time in minutes}</Timeout>

  </Persistence>

  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Present only for HTTP -->

  <InternetServices>

    <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
     name}" type="application/vnd.tmrk.cloud.internetService"/>

      ⋮

  </InternetServices>

  <NodeServices>

    <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
```

```
        type="application/vnd.tmrk.cloud.nodeService">

        <Links>

          <Link href="/backupInternetServices/{backup Internet service identifier}" name="{Internet
            service name}" type="application/vnd.tmrk.cloud.internetService" rel="up"/>

        </Links>

        <Actions>

          <Action href="/nodeServices/{node service identifier}" name="edit"
            type="application/vnd.tmrk.cloud.nodeService"/>

          <Action href="/nodeServices/{node service identifier}" name="remove"/>

        </Actions>

        <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
          address}" type="application/vnd.tmrk.cloud.ipAddress">

          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"/>

          <Host href="/networkHosts/{network host identifier}" name="{network host name}"
            type="application/vnd.tmrk.cloud.networkHost"/>

        </IpAddress>

        <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

        <Port>{port number of service, range of 1 to 65535}</Port>

        <Enabled>{true | false}</Enabled>

        <Description>{textual description}</Description>

      </NodeService>

        ⋮

    </NodeServices>

  </BackupInternetService>

    ⋮

</BackupInternetServices>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 6531
  Content-Type: application/vnd.tmrk.cloud.backupInternetService; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 26 Sep 2011 14:34:00 GMT

<BackupInternetServices href="/backupInternetServices/environments/1"
  type="application/vnd.tmrk.cloud.backupInternetService; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>
```

```
<BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
 type="application/vnd.tmrk.cloud.backupInternetService">

 <Links>

  <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
   rel="up"/>

 </Links>

 <Actions>

  <Action href="/backupInternetServices/1" name="edit"
   type="application/vnd.tmrk.cloud.backupInternetService"/>

  <Action href="/nodeServices/backupInternetServices/1/action/createNodeService"
   name="createNodeService" type="application/vnd.tmrk.cloud.createNodeService"/>

  <Action href="/backupInternetServices/1" name="remove" actionDisabled="disabled"/>

 </Actions>

 <Protocol>TCP</Protocol>

 <Enabled>true</Enabled>

 <Description>Public Website</Description>

 <Persistence>

  <Type>SourceIp</Type>

  <Timeout>5</Timeout>

 </Persistence>

 <InternetServices>

  <InternetService href="/internetServices/1" name="Internet Service 1"
   type="application/vnd.tmrk.cloud.internetService"/>

  <InternetService href="/internetServices/2" name="Internet Service 2"
   type="application/vnd.tmrk.cloud.internetService"/>

  <InternetService href="/internetServices/3" name="Internet Service 3"
   type="application/vnd.tmrk.cloud.internetService"/>

 </InternetServices>

 <NodeServices>

  <NodeService href="/nodeServices/1" name="Node Service 1"
   type="application/vnd.tmrk.cloud.nodeService">

   <Links>

    <Link href="/backupInternetServices/1" name="Backup Internet Service 1"
     type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>

   </Links>

   <Actions>

    <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

    <Action href="/nodeServices/1" name="remove"/>

   </Actions>

   <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress">
```

```
        <Network href="/networks/4" name="10.122.145.64/27"
          type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/12" name="WebServer1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

      <Protocol>HTTP</Protocol>

      <Port>80</Port>

      <Enabled>true</Enabled>

      <Description>This is a node service.</Description>

    </NodeService>

    <NodeService href="/nodeServices/2" name="Node Service 2"
      type="application/vnd.tmrk.cloud.nodeService">

      <Links>

        <Link href="/backupInternetServices/2" name="Backup Internet Service 2"
          type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>

      </Links>

      <Actions>

        <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

        <Action href="/nodeServices/2" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">

        <Network href="/networks/4" name="10.122.145.64/27"
          type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/12" name="WebServer1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

      <Protocol>HTTP</Protocol>

      <Port>80</Port>

      <Enabled>true</Enabled>

      <Description>This is a node service.</Description>

    </NodeService>

  </NodeServices>

</BackupInternetService>

<BackupInternetService href="/backupInternetServices/2" name="Backup Internet Service 1"
  type="application/vnd.tmrk.cloud.backupInternetService">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>
```

```
    <Actions>
      <Action href="/backupInternetServices/2" name="edit"
        type="application/vnd.tmrk.cloud.backupInternetService"/>
      <Action href="/nodeServices/backupInternetServices/2/action/createNodeService"
        name="createNodeService" type="application/vnd.tmrk.cloud.createNodeService"/>
      <Action href="/backupInternetServices/2" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Protocol>HTTP</Protocol>
    <Enabled>true</Enabled>
    <Description>Public Website</Description>
    <Persistence>
      <Type>SourceIp</Type>
      <Timeout>5</Timeout>
    </Persistence>
    <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
    <NodeServices>
      <NodeService href="/nodeServices/1" name="Node Service 1"
        type="application/vnd.tmrk.cloud.nodeService">
        <Links>
          <Link href="/backupInternetServices/1" name="Backup Internet Service 1"
            type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>
        </Links>
        <Actions>
          <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
          <Action href="/nodeServices/1" name="remove"/>
        </Actions>
        <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
          type="application/vnd.tmrk.cloud.ipAddress">
          <Network href="/networks/4" name="10.122.145.64/27"
            type="application/vnd.tmrk.cloud.network"/>
          <Host href="/networkHosts/12" name="WebServer1"
            type="application/vnd.tmrk.cloud.networkHost"/>
        </IpAddress>
        <Protocol>HTTP</Protocol>
        <Port>80</Port>
        <Enabled>true</Enabled>
        <Description>This is a node service.</Description>
      </NodeService>
      <NodeService href="/nodeServices/2" name="Node Service 2"
        type="application/vnd.tmrk.cloud.nodeService">
```

```
        <Links>
          <Link href="/backupInternetServices/2" name="Backup Internet Service 2"
            type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>
        </Links>
        <Actions>
          <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
          <Action href="/nodeServices/2" name="remove"/>
        </Actions>
        <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
          type="application/vnd.tmrk.cloud.ipAddress">
          <Network href="/networks/4" name="10.122.145.64/27"
            type="application/vnd.tmrk.cloud.network"/>
          <Host href="/networkHosts/12" name="WebServer1"
            type="application/vnd.tmrk.cloud.networkHost"/>
        </IpAddress>
        <Protocol>HTTP</Protocol>
        <Port>80</Port>
        <Enabled>true</Enabled>
        <Description>This is a node service.</Description>
      </NodeService>
    </NodeServices>
  </BackupInternetService>
</BackupInternetServices>
```

Return to *7.27 Backup Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.27.2 Get Backup Internet Services by ID

The Get Backup Internet Services by ID call returns information regarding a specified backup Internet service defined in an environment.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Type> for <Persistence> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.
- **CookieInsert** – a custom header field, a cookie, inserted in the request header for persistence.
- **SessionCookie** – a CookieInsert with no timeout, persists until the client clears the request header value.
- **SslSession** – use the SSL session identifier for persistence.

Note: Persistence type values are limited by protocol: CookieInsert is valid only with HTTP, SslSession is valid only with HTTPS, and SourceIp and None are valid with any protocol.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
backup Internet service identifier = 99	Error: no access to backup Internet services
backup Internet service identifier = 1 or 3	Has Internet service
backup Internet service identifier = 1 or 2	Has node services

Request

```
GET http://{Terremark URI}/backupInternetServices/{backup Internet service identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/backupInternetServices/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.backupInternetService; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
  name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/backupInternetServices/{backup Internet service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.createBackupInternetService"/>

    <Action href="/nodeServices/backupInternetServices/{backup Internet service
```

```
    identifier}/action/createNodeService" name="createNodeService"
    type="application/vnd.tmrk.cloud.createNodeService"/>

  <Action href="/backupInternetServices/1" name="remove" actionDisabled="{noAccess | disabled}"/>

</Actions>

<Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
  type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

    <Operation>{name of action performed}</Operation>

    <Status>{Queued | Running | Failed | Success | Error}</Status>

    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>

    <StartTime>{time action started}</StartTime>

    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

    <Notes>{notes on action}</Notes>

    <ErrorMessage>{error message}</ErrorMessage>

    <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Task>

    ⋮

  <TotalCount>{total number of tasks}</TotalCount>

</Tasks>

<Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

<Enabled>{true | false}</Enabled>

<Description>{textual description}</Description>

<Persistence>

  <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>

  <Timeout>{persistence time in minutes}</Timeout>

</Persistence>

<RedirectUrl>{redirect URL}</RedirectUrl> <!-- Present only for HTTP -->

<InternetServices>

  <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
    name}" type="application/vnd.tmrk.cloud.internetService"/>

    ⋮

</InternetServices>

<NodeServices>

  <NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
    type="application/vnd.tmrk.cloud.nodeService">

    <Links>

      <Link href="/backupInternetServices/{backup Internet service identifier}" name="{Internet
```

```
        service name}" type="application/vnd.tmrk.cloud.internetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/{node service identifier}" name="edit"
          type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/{node service identifier}" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
        address}" type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/{network host identifier}" name="{network host name}"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
      <Port>{port number of service, range of 1 to 65535}</Port>
      <Enabled>{true | false}</Enabled>
      <Description>{textual description}</Description>
    </NodeService>
      ⋮
  </NodeServices>
</BackupInternetService>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2703
  Content-Type: application/vnd.tmrk.cloud.backupInternetService
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 01 Jun 2011 21:19:46 GMT
<BackupInternetService href="/backupInternetServices/1" name="Backup Internet Service 1"
  type="application/vnd.tmrk.cloud.backupInternetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/backupInternetServices/1" name="edit"
      type="application/vnd.tmrk.cloud.backupInternetService"/>
    <Action href="/nodeServices/internetServices/1/action/createNodeService" name="createNodeService"
      type="application/vnd.tmrk.cloud.createNodeService"/>
```

```
    <Action href="/backupInternetServices/1" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Protocol>TCP</Protocol>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>5</Timeout>
  </Persistence>
  <InternetServices>
    <InternetService href="/internetServices/1" name="Internet Service 1"
      type="application/vnd.tmrk.cloud.internetService"/>
    <InternetService href="/internetServices/2" name="Internet Service 2"
      type="application/vnd.tmrk.cloud.internetService"/>
    <InternetService href="/internetServices/3" name="Internet Service 3"
      type="application/vnd.tmrk.cloud.internetService"/>
  </InternetServices>
  <NodeServices>
    <NodeService href="/nodeServices/1" name="Node Service 1"
      type="application/vnd.tmrk.cloud.nodeService">
      <Links>
        <Link href="/backupInternetServices/1" name="Backup Internet Service 1"
          type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/1" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
    <NodeService href="/nodeServices/2" name="Node Service 2"
```

```
      type="application/vnd.tmrk.cloud.nodeService">
      <Links>
        <Link href="/backupInternetServices/2" name="Backup Internet Service 2"
         type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>
      </Links>
      <Actions>
        <Action href="/nodeServices/2" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
        <Action href="/nodeServices/2" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
      <Protocol>HTTP</Protocol>
      <Port>80</Port>
      <Enabled>true</Enabled>
      <Description>This is a node service.</Description>
    </NodeService>
  </NodeServices>
</BackupInternetService>
```

Return to *7.27 Backup Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.27.3 Action Backup Internet Services Create

The Action Backup Internet Services Create call creates a backup Internet Service in a specified environment. If successful, the call returns information regarding the backup Internet service created.

The `name` attribute on <CreateBackupInternetService … > is required.

Note: The name may not be that of another backup Internet service.

<Protocol> is required and permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

<Port> is required and must be in the range of 1 to 65535.

<Enabled> is required.

<Type> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.

If <Timeout> is absent with <Type>SourceIp</Type>, then <Timeout> defaults to 2 minutes. Omit <Timeout> if <Type>none</Type>.

Note: The minimum value for <Timeout> is 2 (for two minutes) and the maximum is 5.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
backup Internet service identifier = 99	Error: no access to backup Internet services

Request

```
POST http://{Terremark URI}/backupInternetServices/environments/{environment
  identifier}/action/createBackupInternetService
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/backupInternetServices/environments/1/ …
  action/createBackupInternetService
```

Body

```
<CreateBackupInternetService name="{backup Internet service name}"> <!-- name required -->
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Persistence> <!-- Required -->
    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type> <!-- Required -->
    <Timeout>{persistence time in minutes}</Timeout> <!-- Optional -->
  </Persistence>
  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Optional, available only for HTTP -->
</CreateBackupInternetService>
```

EXAMPLE

```
<CreateBackupInternetService name="Service Name">
```

```
  <Protocol>HTTP</Protocol>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
</CreateBackupInternetService>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.backupInternetService
  Location: /backupInternetServices/{backup Internet service identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<BackupInternetService href="/backupInternetServices/{backup Internet service identifier}"
  name="{backup Internet service name}" type="application/vnd.tmrk.cloud.backupInternetService"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
  </Links>
  <Actions>
    <Action href="/backupInternetServices/{backup Internet service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.internetService"/>
    <Action href="/nodeServices/internetServices/{backup Internet service
      identifier}/action/createNodeService" name="createNodeService"
      type="application/vnd.tmrk.cloud.createNodeService"/>
    <Action href="/backupInternetServices/{backup Internet service identifier}" name="remove"
      actionDisabled="{noAccess | disabled}"/>
  </Actions>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
  <Enabled>{true | false}</Enabled>
  <Description>{textual description}</Description>
  <Persistence>
    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type>
    <Timeout>{persistence time in minutes}</Timeout>
  </Persistence>
  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Present only for HTTP -->
</BackupInternetService>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 2703
  Content-Type: application/vnd.tmrk.cloud.backupInternetService
  Location: /backupInternetServices/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 08 Jun 2011 22:01:36 GMT

<BackupInternetService href="/backupInternetServices/1" name="Internet Service 1"
  type="application/vnd.tmrk.cloud.backupInternetService" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/backupInternetServices/1" name="edit"
      type="application/vnd.tmrk.cloud.internetService"/>

    <Action href="/nodeServices/internetServices/1/action/createNodeService" name="createNodeService"
      type="application/vnd.tmrk.cloud.createNodeService"/>

    <Action href="/backupInternetServices/1" name="remove" actionDisabled="disabled"/>

  </Actions>

  <Protocol>TCP</Protocol>

  <Enabled>true</Enabled>

  <Description>Public Website</Description>

  <Persistence>

    <Type>SourceIp</Type>

    <Timeout>3</Timeout>

  </Persistence>

</BackupInternetService>
```

Return to *7.27 Backup Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.27.4 Action Backup Internet Services Edit

The Action Backup Internet Services Edit call edits a backup Internet Service in a specified environment. If successful, the call returns the task that modified the backup Internet service.

The `name` attribute on <BackupInternetService … > is required and may be changed.

Note: The name may not be changed to that of another backup Internet group.

<Protocol> is required but may not be changed. Permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol.

<Enabled> is required.

<Type> refers to the method for persisting a connection session. Permitted values are:

- **None** – no persistence.
- **SourceIp** – use the IP address of the source device for persistence.

If <Timeout> is absent with <Type>SourceIp</Type>, then <Timeout> defaults to 2 minutes. Omit <Timeout> if <Type>none</Type>.

Note: The minimum value for <Timeout> is 2 (for two minutes) and the maximum is 5.

Both <InternetServices> and <InternetService> are optional and ignored if present.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
backup Internet service identifier = 99	Error: no access to backup Internet services
backup Internet service identifier = 1 or 3	Has Internet service
backup Internet service identifier = 1 or 2	Has node services

Request

```
PUT http://{Terremark URI}/backupInternetServices/{backup Internet service identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/backupInternetServices/1
```

Body

```
<BackupInternetService name="{backup Internet service name}"> <!-- name required -->
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol> <!-- Required -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <Description>{textual description}</Description> <!-- Optional -->
  <Persistence> <!-- Required -->
    <Type>{None | SourceIp | CookieInsert | SessionCookie | SslSession}</Type> <!-- Required -->
```

```
    <Timeout>{persistence time in minutes}</Timeout> <!-- Optional -->
  </Persistence>
  <RedirectUrl>{redirect URL}</RedirectUrl> <!-- Optional, available only for HTTP -->
  <InternetServices> <!-- Optional, ignored if present -->
    <InternetService href="/internetServices/{Internet service identifier}" name="{Internet service
      name}" type="application/vnd.tmrk.cloud.internetService"/> <!-- Optional -->
      ⋮
  </InternetServices>
</BackupInternetService>
```

EXAMPLE

```
<BackupInternetService name="Service Name">
  <Protocol>HTTP</Protocol>
  <Enabled>true</Enabled>
  <Description>My description</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
  <RedirectUrl>http://foobar.com</RedirectUrl>
  <InternetServices>
    <InternetService href="/internetServices/1" type="application/vnd.tmrk.cloud.internetService"/>
    <InternetService href="/internetServices/2" type="application/vnd.tmrk.cloud.internetService"/>
    <InternetService href="/internetServices/3" type="application/vnd.tmrk.cloud.internetService"/>
  </InternetServices>
</BackupInternetService>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Edit Backup Internet Service</Operation>
  <Status>{Queued | Running | Failed | Success | Error}</Status>
  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
  <StartTime>{time action started}</StartTime>
```

```
  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 502
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 14 Jun 2011 20:26:43 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Edit Backup Internet Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/backupInternetServices/1" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-14T20:26:43.736038Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.27 Backup Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.27.5 Action Backup Internet Services Remove

The Action Backup Internet Services Remove call removes a backup Internet service from an environment. If successful, the call returns the task that removed the backup Internet service.

Note: The backup Internet service must have neither node services nor Internet services associated to remove.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
backup Internet service identifier = 99	Error: no access to backup Internet services
backup Internet service identifier = 1 or 3	Has Internet service
backup Internet service identifier = 1 or 2	Has node services

Request

```
DELETE http://{Terremark URI}/backupInternetServices/{backup Internet service identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/backupInternetServices/4
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Backup Internet Service</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 496
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 20:39:31 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete Backup Internet Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/internetServices/6" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-15T18:38:03.0715083Z</StartTime>
```

```
    <Notes>Some notes about the operation.</Notes>
    <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
```

Return to *7.27 Backup Internet Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.28 RNAT

7.28.1 Get RNATs 834
7.28.2 Get RNATs by ID 841
7.28.3 Get RNATs Network 844
7.28.4 Get Associations by ID 845
7.28.5 Action Associations Edit Network 847
7.28.6 Action Associations Create Device 849
7.28.7 Action Associations Remove Device 851

Advance to *7.29 Node Service*.

This section contains the calls for the RNAT entity.

Return to *7 Application Programming Interface Reference Guide*.

7.28.1 Get RNATs

The Get RNATs call returns information regarding the reverse network address translations defined in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 2 = 0	Has associations
RNAT identifier = 1 or mod 3 = 0	Has network associations

Request

```
GET http://{Terremark URI}/rnats/environments/{environment identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/rnats/environments/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.rnatConfiguration
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<RnatConfiguration href="/rnats/environments/{environment identifier}" name="{environment name}"
  type="application/vnd.tmrk.cloud.rnatConfiguration" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment" rel="up"/>

  </Links>

  <Actions>

    <Action href="/rnats/environments/{environment identifier}/action/createAssociation"
      name="addRnatAssociation" type="application/vnd.tmrk.cloud.createRnatAssociation"/>

  </Actions>

  <Networks>

    <NetworkRnat href="/rnats/networks/{network identifier}" name="{network address}/{network prefix
      length}" type="application/vnd.tmrk.cloud.networkRnat">

      <Links>

        <Link href="/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.environment" rel="up"/>

      </Links>

      <Actions>

        <Action href="/rnats/networks/{network identifier}" name="edit"
          type="application/vnd.tmrk.cloud.networkRnat"/>

      </Actions>

      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">

        <NetworkType>{Dmz | Internal}</NetworkType>

      </Network>

      <Rnat href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
        type="application/vnd.tmrk.cloud.rnat"/>
```

```
    </NetworkRnat>
      ⋮
  </Networks>
  <Rnats>
    <Rnat href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
      type="application/vnd.tmrk.cloud.rnat">
    <Links>
      <Link href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" rel="up"/>
      <Link href="/rnats/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.rnatConfiguration" rel="up"/>
    </Links>
    <Default>{true | false}</Default>
    <PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
      type="application/vnd.tmrk.cloud.publicIp"/>
    <Networks>
      <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
        type="application/vnd.tmrk.cloud.network">
        <NetworkType>{Dmz | Internal}</NetworkType>
      </Network>
    </Networks>
    <Associations>
      <Association href="/rnats/associations/{association identifier}" name="{host IP address
        associated to RNAT}" type="application/vnd.tmrk.cloud.rnatAssociation">
        <Links>
          <Link href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
            type="application/vnd.tmrk.cloud.publicIp" rel="up"/>
        </Links>
        <Actions>
          <Action href="/rnats/associations/{association identifier}" name="remove"/>
        </Actions>
        <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
          address}" type="application/vnd.tmrk.cloud.ipAddress">
          <Network href="/networks/{network identifier}" name="{network address}/{network prefix
            length}" type="application/vnd.tmrk.cloud.network"/>
          <Host href="/networkHosts/{network host identifier}" name="{network host name}"
            type="application/vnd.tmrk.cloud.networkHost"/>
        </IpAddress>
      </Association>
        ⋮
    </Associations>
```

```
    </Rnat>
     ⋮
    </Rnats>
  </RnatConfiguration>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 5798
    Content-Type: application/vnd.tmrk.cloud.rnatConfiguration
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 26 May 2011 18:20:34 GMT
  <RnatConfiguration href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/rnats/environments/1/action/createAssociation" name="createRnatAssociation"
        type="application/vnd.tmrk.cloud.createRnatAssociation"/>
    </Actions>
    <Networks>
      <NetworkRnat href="/rnats/networks/1" name="10.0.4.32/27"
        type="application/vnd.tmrk.cloud.networkRnat">
        <Links>
          <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
            rel="up"/>
        </Links>
        <Actions>
          <Action href="/rnats/networks/1" name="edit" type="application/vnd.tmrk.cloud.networkRnat"/>
        </Actions>
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
          <NetworkType>Dmz</NetworkType>
        </Network>
        <Rnat href="/rnats/5" name="72.46.238.10" type="application/vnd.tmrk.cloud.rnat"/>
      </NetworkRnat>
      <NetworkRnat href="/rnats/networks/2" name="10.67.2.64/28"
        type="application/vnd.tmrk.cloud.networkRnat">
        <Links>
          <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
            rel="up"/>
```

```
      </Links>
      <Actions>
        <Action href="/rnats/networks/2" name="edit" type="application/vnd.tmrk.cloud.networkRnat"/>
      </Actions>
      <Network href="/networks/2" name="10.67.2.64/28" type="application/vnd.tmrk.cloud.network">
        <NetworkType>Dmz</NetworkType>
      </Network>
      <Rnat href="/rnats/5" name="72.46.238.10" type="application/vnd.tmrk.cloud.rnat"/>
    </NetworkRnat>
  </Networks>
  <Rnats>
    <Rnat href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat">
      <Links>
        <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
          rel="up"/>
        <Link href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration"
          rel="up"/>
      </Links>
      <Default>true</Default>
      <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>
      <Networks>
        <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
          <NetworkType>Dmz</NetworkType>
        </Network>
      </Networks>
      <Associations>
        <Association href="/rnats/associations/1" name="10.0.8.33"
          type="application/vnd.tmrk.cloud.rnatAssociation">
          <Links>
            <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat" rel="up"/>
          </Links>
          <Actions>
            <Action href="/rnats/associations/1" name="remove"/>
          </Actions>
          <IpAddress href="/ipAddresses/networks/3/10.0.8.33" name="10.0.8.33"
            type="application/vnd.tmrk.cloud.ipAddress">
            <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>
            <Host href="/networkHosts/1" name="Virtual Machine 1"
              type="application/vnd.tmrk.cloud.networkHost"/>
```

```
      </IpAddress>
    </Association>
    <Association href="/rnats/associations/2" name="10.0.8.34"
      type="application/vnd.tmrk.cloud.rnatAssociation">
      <Links>
        <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat" rel="up"/>
      </Links>
      <Actions>
        <Action href="/rnats/associations/2" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/3/10.0.8.34" name="10.0.8.34"
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Association>
  </Associations>
</Rnat>
<Rnat href="/rnats/2" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat">
  <Links>
    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>
    <Link href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration"
      rel="up"/>
  </Links>
  <Default>false</Default>
  <PublicIp href="/publicIps/2" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>
  <Associations>
    <Association href="/rnats/associations/1" name="10.0.8.33"
      type="application/vnd.tmrk.cloud.rnatAssociation">
      <Links>
        <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat" rel="up"/>
      </Links>
      <Actions>
        <Action href="/rnats/associations/1" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/1/10.0.8.33" name="10.0.8.33"
        type="application/vnd.tmrk.cloud.ipAddress">
```

```
        <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

    </Association>

    <Association href="/rnats/associations/2" name="10.0.8.34"
      type="application/vnd.tmrk.cloud.rnatAssociation">

      <Links>

        <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"
          rel="up"/>

      </Links>

      <Actions>

        <Action href="/rnats/associations/2" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/3/10.0.8.34" name="10.0.8.34"
        type="application/vnd.tmrk.cloud.ipAddress">

        <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

    </Association>

  </Associations>

</Rnat>

<Rnat href="/rnats/3" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration"
      rel="up"/>

  </Links>

  <Default>false</Default>

  <PublicIp href="/publicIps/3" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>

  <Networks>

    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">

      <NetworkType>Dmz</NetworkType>

    </Network>

  </Networks>

</Rnat>

</Rnats>
```

```
</RnatConfiguration>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.2 Get RNATs by ID

The Get RNATs by ID call returns information regarding a specified reverse network address translation defined in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 2 = 0	Has associations
RNAT identifier = 1 or mod 3 = 0	Has network associations

Request

```
GET http://{Terremark URI}/rnats/{public IP identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/rnats/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.rnat
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: Fri, 27 May 2011 20:30:31 GMT

<Rnat href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
  type="application/vnd.tmrk.cloud.rnat" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
```

```
      type="application/vnd.tmrk.cloud.environment" rel="up"/>
    <Link href="/rnats/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.rnatConfiguration" rel="up"/>
  </Links>
  <Default>{true | false}</Default>
  <PublicIp href="/publicIps/{public IP identifier}" name="{public IP address}"
    type="application/vnd.tmrk.cloud.publicIp"/>
  <Networks>
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">
      <NetworkType>{Dmz | Internal}</NetworkType>
    </Network>
  </Networks>
  <Associations>
    <Association href="/rnats/associations/{association identifier}" name="{host IP address associated
      to RNAT}" type="application/vnd.tmrk.cloud.rnatAssociation">
      <Links>
        <Link href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
          type="application/vnd.tmrk.cloud.publicIp" rel="up"/>
      </Links>
      <Actions>
        <Action href="/rnats/associations/{association identifier}" name="remove"/>
      </Actions>
      <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
        address}" type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
          type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/{network host identifier}" name="{network host name}"
          type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Association>
      ⋮
  </Associations>
</Rnat>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1995
  Content-Type: application/vnd.tmrk.cloud.rnat
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 20:30:31 GMT
```

```
<Rnat href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.rnat"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
      rel="up"/>

    <Link href="/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration" rel="up"/>

  </Links>

  <Default>true</Default>

  <PublicIp href="/publicIps/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp"/>

  <Networks>

    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">

      <NetworkType>Dmz</NetworkType>

    </Network>

  </Networks>

  <Associations>

    <Association href="/rnats/associations/1" name="10.0.8.33"
      type="application/vnd.tmrk.cloud.rnatAssociation">

      <Links>

        <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

      </Links>

      <Actions>

        <Action href="/rnats/associations/1" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/3/10.0.8.33" name="10.0.8.33"
        type="application/vnd.tmrk.cloud.ipAddress">

        <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>

        <Host href="/networkHosts/1" name="Virtual Machine 1"
          type="application/vnd.tmrk.cloud.networkHost"/>

      </IpAddress>

    </Association>

    <Association href="/rnats/associations/2" name="10.0.8.34"
      type="application/vnd.tmrk.cloud.rnatAssociation">

      <Links>

        <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

      </Links>

      <Actions>

        <Action href="/rnats/associations/2" name="remove"/>

      </Actions>

      <IpAddress href="/ipAddresses/networks/3/10.0.8.34" name="10.0.8.34"
```

```
        type="application/vnd.tmrk.cloud.ipAddress">
        <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>
        <Host href="/networkHosts/1" name="Virtual Machine 1"
         type="application/vnd.tmrk.cloud.networkHost"/>
      </IpAddress>
    </Association>
  </Associations>
</Rnat>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.3 Get RNATs Network

The Get RNATs Network call returns information regarding a network RNAT association in an environment.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 3 = 0	Has network associations

Request

```
GET http://{Terremark URI}/rnats/networks/{network identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/rnats/networks/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.networkRnat
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<NetworkRnat href="/rnats/networks/{network identifier}" name="{network address}/{network prefix
  length}" type="application/vnd.tmrk.cloud.networkRnat" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/environments/{environment identifier}" name="{environment name}"
     type="application/vnd.tmrk.cloud.environment" rel="up"/>
```

```
    </Links>
    <Actions>
      <Action href="/rnats/networks/{network identifier}" name="edit"
        type="application/vnd.tmrk.cloud.networkRnat"/>
    </Actions>
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
    <Rnat href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
      type="application/vnd.tmrk.cloud.rnat"/>
  </NetworkRnat>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 535
    Content-Type: application/vnd.tmrk.cloud.networkRnat
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 21 Jun 2011 18:19:13 GMT
  <NetworkRnat href="/rnats/networks/1" name="10.0.4.32/27"
    type="application/vnd.tmrk.cloud.networkRnat" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/rnats/networks/1" name="edit" type="application/vnd.tmrk.cloud.networkRnat"/>
    </Actions>
    <Network href="/networks/1" name="10.0.4.32/27" type="application/vnd.tmrk.cloud.network">
      <NetworkType>Dmz</NetworkType>
    </Network>
    <Rnat href="/rnats/5" name="72.46.238.10" type="application/vnd.tmrk.cloud.rnat"/>
  </NetworkRnat>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.4 Get Associations by ID

The Get Associations by ID call returns information regarding a specified association for a reverse network address translation defined in an environment.

<NetworkType> permitted values are:

- **Dmz** (Demilitarized zone) – network on which servers are behind the firewall but permit access from the public Internet.
- **Internal** – network on which access to the servers for such reasons as administration and backup are performed but isolated from the public Internet.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 2 = 0	Has associations

Request

```
GET http://{Terremark URI}/rnats/associations/{association identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/rnats/associations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.rnatAssociation
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<RnatHostAssociation href="/rnats/associations/{association identifier}" name="{host IP address}"
  type="application/vnd.tmrk.cloud.rnatAssociation" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
      type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/rnats/associations/{association identifier}" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>

    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
```

```
    </IpAddress>
  </RnatHostAssociation>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 730
    Content-Type: application/vnd.tmrk.cloud.rnatAssociation
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 01 Jun 2011 18:50:03 GMT
  <RnatHostAssociation href="/rnats/associations/1" name="10.0.8.33"
    type="application/vnd.tmrk.cloud.rnatAssociation" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>
    </Links>
    <Actions>
      <Action href="/rnats/associations/1" name="remove"/>
    </Actions>
    <IpAddress href="/ipAddresses/networks/3/10.0.8.33" name="10.0.8.33"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Network href="/networks/3" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>
      <Host href="/networkHosts/1" name="Virtual Machine 1"
        type="application/vnd.tmrk.cloud.networkHost"/>
    </IpAddress>
  </RnatHostAssociation>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.5 Action Associations Edit Network

The Action Associations Edit Network call edits a network RNAT association in an environment. If successful, the call returns the task that modified the association.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 2 = 0	Has associations
RNAT identifier = 1 or mod 3 = 0	Has network associations

Request

```
PUT http://{Terremark URI}/rnats/networks/{network identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/rnats/networks/1
```

Body

```
<NetworkRnat>
  <Rnat href="/rnats/5"/> <!-- Required -->
</NetworkRnat>
```

EXAMPLE

```
<NetworkRnat>
  <Rnat href="/rnats/5"/>
</NetworkRnat>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure RNAT Association</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 501
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 08 Jul 2011 22:23:42 GMT
```

```
<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Operation>Configure RNAT Association</Operation>
  <Status>Queued</Status>
  <ImpactedItem href="/rnats/networks/1" type="application/vnd.tmrk.cloud.networkRnat"/>
  <StartTime>2011-07-08T22:23:43.2024222Z</StartTime>
  <Notes>Some notes about the operation.</Notes>
  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>
</Task>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.6 Action Associations Create Device

The Action Associations Create Device call creates a device RNAT association in an environment. If successful, the call returns information regarding the association for a reverse network address translation that was created.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT

Request

```
POST http://{Terremark URI}/rnats/environments/{environment identifier}/action/createAssociation
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/rnats/environments/1/action/createAssociation
```

Body

```
<CreateRnatAssociation>
  <PublicIp href="/publicIps/{public IP identifier}"/> <!-- Required -->
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}"/> <!-- Required -->
</CreateRnatAssociation>
```

EXAMPLE

```
<CreateRnatAssociation>
  <PublicIp href="/publicIps/2"/>
  <IpAddress href="/ipAddresses/networks/4/10.122.145.71"/>
</CreateRnatAssociation>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.rnatAssociation
  Location: /rnats/associations/{association identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<RnatHostAssociation href="/rnats/associations/{association identifier}" name="{host IP address}"
  type="application/vnd.tmrk.cloud.rnatAssociation" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/rnats/{public IP identifier}" name="{public IP to which RNATs point}"
      type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/rnats/associations/{association identifier}" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>

    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>

  </IpAddress>

</RnatHostAssociation>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 730
  Content-Type: application/vnd.tmrk.cloud.rnatAssociation
  Location: /rnats/associations/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 23:13:16 GMT

<RnatHostAssociation href="/rnats/associations/1" name="10.0.8.33"
  type="application/vnd.tmrk.cloud.rnatAssociation" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/rnats/1" name="72.46.234.8" type="application/vnd.tmrk.cloud.publicIp" rel="up"/>

  </Links>

  <Actions>

    <Action href="/rnats/associations/1" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/3/10.0.8.33" name="10.0.8.33"
```

```
      type="application/vnd.tmrk.cloud.ipAddress">

      <Network href="/networks/1" name="10.0.8.32/27" type="application/vnd.tmrk.cloud.network"/>

      <Host href="/networkHosts/1" name="Virtual Machine 1"
        type="application/vnd.tmrk.cloud.networkHost"/>

    </IpAddress>

  </RnatHostAssociation>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.28.7 Action Associations Remove Device

The Action Associations Remove Device call removes a device RNAT association from a network host in an environment. If successful, the call returns the task that removed the association.

Live Specification Test Values

Condition	Outcome
environment = 99	Error: no access to environments
RNAT identifier = 99	Error: no access to RNAT
RNAT identifier = 1 or mod 2 = 0	Has associations

Request

```
DELETE http://{Terremark URI}/rnats/associations/{association identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/rnats/associations/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete RNAT Association</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>
```

```
  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 517
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 16 Jun 2011 14:10:03 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Delete RNAT Association</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/rnats/associations/1" type="application/vnd.tmrk.cloud.internetService"/>

  <StartTime>2011-06-16T14:10:03.7916704Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.28 RNAT*.

Return to *7 Application Programming Interface Reference Guide*.

7.29 Node Service

7.29.1 Get Node Services by ID 853

7.29.2 Action Node Services Create Internet Service 855

7.29.3 Action Node Services Create Backup Internet Service 858

7.29.4 Action Node Services Edit 860

7.29.5 Action Node Services Remove 863

Advance to *7.30 IP Address*.

This section contains the calls for the Node Service entity.

Return to *7 Application Programming Interface Reference Guide*.

7.29.1 Get Node Services by ID

The Get Node Services by ID call returns information regarding a specified node service defined in an environment.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Request

```
GET http://{Terremark URI}/nodeServices/{node service identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/nodeServices/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.nodeService
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/nodeServices/{node service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.nodeService"/>

    <Action href="/nodeServices/{node service identifier}" name="remove"/>

  </Actions>

  <Tasks href="/tasks/virtualMachines/{virtual machine identifier}"
    type="application/vnd.tmrk.cloud.task; type=collection"> <!-- only most recent task -->

    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">

      <Operation>{name of action performed}</Operation>
```

```
      <Status>{Queued | Running | Failed | Success | Error}</Status>
      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>
      <StartTime>{time action started}</StartTime>
      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
      <Notes>{notes on action}</Notes>
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{user name}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
      ⋮
    <TotalCount>{total number of tasks}</TotalCount>
  </Tasks>
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
  </IpAddress>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
  <Port>{port number of service, range of 1 to 65535}</Port>
  <Enabled>{true | false}</Enabled>
  <Description>{textual description}</Description>
</NodeService>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 870
  Content-Type: application/vnd.tmrk.cloud.nodeService
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 27 May 2011 21:35:11 GMT

<NodeService href="/nodeServices/1" name="Node Service 1"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/internetServices/5" name="Internet Service 5"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>
    <Action href="/nodeServices/1" name="remove"/>
```

```
    </Actions>
    <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
      type="application/vnd.tmrk.cloud.ipAddress">
      <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>
      <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
    </IpAddress>
    <Protocol>HTTP</Protocol>
    <Port>80</Port>
    <Enabled>true</Enabled>
    <Description>This is a node service.</Description>
  </NodeService>
```

Return to *7.29 Node Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.29.2 Action Node Services Create Internet Service

The Action Node Services Create Internet Service call creates a node service for a specified Internet service. If successful, the call returns information regarding the node service that was created.

The `name` attribute on <CreateNodeService … > is required.

Note: The `name` may not be that of another node service and may not exceed fifty characters.

<IpAddress> is required and the `href` attribute on that element is required to identify the network host with which the node service is associated.

<Port> is required and must be in the range of 1 to 65535.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Request

```
  POST http://{Terremark URI}/nodeServices/internetServices/{Internet service
    identifier}/action/createNodeService
```

EXAMPLE

```
  POST http://services.enterprisecloud.terremark.com/nodeServices/internetServices/1/ …
```

```
action/createNodeService
```

Body

```
<CreateNodeService name="{node service name}"> <!-- name required -->

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"/> <!-- Required -->

  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Required -->

  <Enabled>{true | false}</Enabled> <!-- Required -->

  <Description>{textual description}</Description> <!-- Optional -->

</CreateNodeService>
```

EXAMPLE

```
<CreateNodeService name="Node Service 1">

  <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress"/>

  <Port>80</Port>

  <Enabled>true</Enabled>

  <Description>This is a node service.</Description>

</CreateNodeService>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.nodeService
  Location: /nodeServices/{node service identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/{Internet service identifier}" name="{Internet service name}"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/nodeServices/{node service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.nodeService"/>

    <Action href="/nodeServices/{node service identifier}" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">

    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>
```

```
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>

  </IpAddress>

  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>

  <Port>{port number of service, range of 1 to 65535}</Port>

  <Enabled>{true | false}</Enabled>

  <Description>{textual description}</Description>

</NodeService>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 870
  Content-Type: application/vnd.tmrk.cloud.nodeService
  Location: /nodeServices/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 21:00:59 GMT

<NodeService href="/nodeServices/1" name="Node Service 1"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/internetServices/5" name="Internet Service 5"
      type="application/vnd.tmrk.cloud.internetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/nodeServices/1" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

    <Action href="/nodeServices/1" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress">

    <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>

    <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>

  </IpAddress>

  <Protocol>HTTP</Protocol>

  <Port>80</Port>

  <Enabled>true</Enabled>

  <Description>This is a node service.</Description>

</NodeService>
```

Return to *7.29 Node Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.29.3 Action Node Services Create Backup Internet Service

The Action Node Services Create Backup Internet Service call creates a node service for a specified backup Internet service in an environment. If successful, the call returns information regarding the node service that was created.

The `name` attribute on <CreateNodeService … > is required.

Note: The `name` may not be that of another node service and may not exceed fifty characters.

<IpAddress> is required and the `href` attribute on that element is required to identify the network host with which the node service is associated.

<Port> is required and must be in the range of 1 to 65535.

<Protocol> permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Live Specification Test Values

Condition	Outcome
backup Internet service identifier mod 5	valid backup Internet services

Request

```
POST http://{Terremark URI}/nodeServices/backupInternetServices/{backup Internet service
  identifier}/action/createNodeService
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/nodeServices/backupInternetServices/5/ …
  action/createNodeService
```

Body

```
<CreateNodeService name="{node service name}"> <!-- name required -->

  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"/> <!-- Required -->

  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Required -->

  <Enabled>{true | false}</Enabled> <!-- Required -->

  <Description>{textual description}</Description> <!-- Optional -->
```

```
</CreateNodeService>
```

EXAMPLE

```
<CreateNodeService name="Node Service 1">
  <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress"/>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>This is a node service.</Description>
</CreateNodeService>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.nodeService
  Location: /nodeServices/{node service identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<NodeService href="/nodeServices/{node service identifier}" name="{node service name}"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/backupInternetServices/{backup Internet service identifier}" name="{backup Internet
      service name}" type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>
  </Links>
  <Actions>
    <Action href="/nodeServices/{node service identifier}" name="edit"
      type="application/vnd.tmrk.cloud.nodeService"/>
    <Action href="/nodeServices/{node service identifier}" name="remove"/>
  </Actions>
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}"
      type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/>
  </IpAddress>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol>
  <Port>{port number of service, range of 1 to 65535}</Port>
  <Enabled>{true | false}</Enabled>
  <Description>{textual description}</Description>
</NodeService>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 1012
  Content-Type: application/vnd.tmrk.cloud.nodeService
  Location: /nodeServices/5
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 02 Sep 2011 17:00:46 GMT

<NodeService href="/nodeServices/5" name="Node Service 1"
  type="application/vnd.tmrk.cloud.nodeService" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/backupInternetServices/5" name="Backup Internet Service 5"
      type="application/vnd.tmrk.cloud.backupInternetService" rel="up"/>

  </Links>

  <Actions>

    <Action href="/nodeServices/5" name="edit" type="application/vnd.tmrk.cloud.nodeService"/>

    <Action href="/nodeServices/5" name="remove"/>

  </Actions>

  <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress">

    <Network href="/networks/4" name="10.122.145.64/27" type="application/vnd.tmrk.cloud.network"/>

    <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>

  </IpAddress>

  <Protocol>HTTP</Protocol>

  <Port>80</Port>

  <Enabled>true</Enabled>

  <Description>This is a node service.</Description>

</NodeService>
```

Return to *7.29 Node Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.29.4 Action Node Services Edit

The Action Node Services Edit call edits the name, description, or enablement of a node service in an environment. If successful, the call returns the task that modified the node service.

The `name` attribute on <NodeService … > is required and may be changed.

Note: The `name` may not be changed to that of another node service and may not exceed fifty characters.

<Port> and <IpAddress> and its subordinate elements, <Network> and <Hosts>, are all optional and ignored if present.

<Protocol> is optional and ignored if present. Permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Request

```
PUT http://{Terremark URI}/nodeServices/{node service identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/nodeServices/1
```

Body

```
<NodeService name="{node service name}"> <!-- Required -->
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"> <!-- Optional, ignored if present -->
    <Network href="/networks/{network identifier}" name="{network address}/{network prefix length}""
      type="application/vnd.tmrk.cloud.network"/> <!-- Optional, ignored if present -->
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/> <!-- Optional, ignored if present -->
  </IpAddress>
  <Protocol>{HTTP | HTTPS | TCP | UDP | IPSEC | FTP}</Protocol> <!-- Optional, ignored if present -->
  <Port>{port number of service, range of 1 to 65535}</Port> <!-- Optional, ignored if present -->
  <Enabled>{true | false}</Enabled> <!-- Required -->
  <Description>{textual description}</Description> <!-- Optional -->
</NodeService>
```

EXAMPLE

```
<NodeService name="Node Service 1">
  <IpAddress href="/ipAddresses/networks/4/10.122.145.71" name="10.122.145.71"
    type="application/vnd.tmrk.cloud.ipAddress">
    <Network href="/networks/57" name="10.122.145.71/27" type="application/vnd.tmrk.cloud.network"/>
    <Host href="/networkHosts/12" name="WebServer1" type="application/vnd.tmrk.cloud.networkHost"/>
  </IpAddress>
  <Protocol>HTTP</Protocol>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>This is a node service.</Description>
</NodeService>
```

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Node Service</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>

  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 484
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 20:33:53 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Configure Node Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/nodeServices/1" type="application/vnd.tmrk.cloud.nodeService"/>

  <StartTime>2011-06-15T20:33:53.341307Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.29 Node Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.29.5 Action Node Services Remove

The Action Node Services Remove call removes a specified node service from an environment. If successful, the call returns the task that removed the node service.

The `name` attribute on <NodeService … > is required.

<Port> and <IpAddress> and its subordinate elements, <Network> and <Hosts>, are all optional and ignored if present.

<Protocol> is optional and ignored if present. Permitted values are:

- **HTTP** – HyperText Transfer Protocol.
- **HTTPS** – HyperText Transfer Protocol Secure.
- **TCP** – Transmission Control Protocol.
- **UDP** – User Datagram Protocol.
- **IPSEC** – Internet Protocol security.
- **FTP** – File Transfer Protocol

Request

```
DELETE http://{Terremark URI}/nodeServices/{node service identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/nodeServices/1
```

Body

none

Response

```
HTTP/1.1 202 Accepted
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Node Service</Operation>

  <Status>{Queued | Running | Failed | Success | Error}</Status>

  <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of item
    acted upon}"/>

  <StartTime>{time action started}</StartTime>

  <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->

  <Notes>{notes on action}</Notes>

  <ErrorMessage>{error message}</ErrorMessage>
```

```
  <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
    domain part} | {API user family name}, {API user given name}}"
    type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

EXAMPLE

```
HTTP/1.1 202 Accepted
  Content-Length: 485
  Content-Type: application/vnd.tmrk.cloud.task
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 22:51:33 GMT

<Task href="/tasks/1" type="application/vnd.tmrk.cloud.task"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Operation>Remove Node Service</Operation>

  <Status>Queued</Status>

  <ImpactedItem href="/nodeServices/6" type="application/vnd.tmrk.cloud.nodeService"/>

  <StartTime>2011-06-15T22:51:33.224307Z</StartTime>

  <Notes>Some notes about the operation.</Notes>

  <InitiatedBy href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user"/>

</Task>
```

Return to *7.29 Node Service*.

Return to *7 Application Programming Interface Reference Guide*.

7.30 IP Address

7.30.1 Get IP Addresses by ID 864

7.30.2 Action IP Addresses Configure Reservation 867

7.30.3 Action IP Addresses Reserve 868

7.30.4 Action IP Addresses Unreserve 869

7.30.5 Action IP Addresses Sync 869

Advance to *7.31 Administrative Organization*.

This section contains the calls for the IP Address entity.

Return to *7 Application Programming Interface Reference Guide*.

7.30.1 Get IP Addresses by ID

The Get IP Addresses by ID call returns information regarding a specified IP Addresses defined in an environment.

An <IpAddress> element with no subordinate elements is not assigned, not configured on a host, and not associated to a reverse network address translation. An <IpAddress> element may have more than one subordinate element, which appear under the following circumstances:

- <Actions> appears for IP addresses configured on a host but not assigned to that host.
- <Hosts> appears for IP addresses assigned to a host.
- <DetectedOn> appears for IP addresses configured on a host but not assigned.
- <RnatAddress> appears for IP addresses associated to a reverse network address translation.

<Actions … name="sync"> is enabled for IP addresses configured on a host but not assigned to that host.

Live Specification Test Values

Condition	Outcome
IP address = 2.2.2.2	Error: not found
IP address = 10.3.3.3	Error: no access
IP address LSB =1 or mod 3	Has host assigned to
IP address LSB =1 or mod 4	Has host detected on
IP address LSB =1 or mod 5	Has RNAT
IP address LSB = 36	Has host assigned to and detected on same VM

Request

```
GET http://{Terremark URI}/ipAddresses/networks/{network identifier}/{host IP address}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/ipAddresses/networks/1/10.0.4.60
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.ipAddress
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
  address}" type="application/vnd.tmrk.cloud.ipAddress" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/networks/{network identifier}" type="application/vnd.tmrk.cloud.network" rel="up"/>

  </Links>

  <Actions>
```

```
    <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/reserve"
     name="reserve" actionDisabled="{noAccess | disabled}"/>

    <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/unreserve"
     name="unreserve" actionDisabled="{noAccess | disabled}"/>

    <Action href="/ipAddresses/networks/{network identifier}/{host IP address}/action/sync"
     name="sync" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <!-- <Hosts> appears for IP addresses assigned to a host -->

  <Host href="/networkHosts/{network host identifier}" name="{network host name}"
   type="application/vnd.tmrk.cloud.networkHost"/>

  <!-- <DetectedOn> appears for IP addresses configured on a host but not assigned -->

  <DetectedOn href="/networkHosts/{different network host identifier}" name="{different network host
   name}" type="application/vnd.tmrk.cloud.networkHost"/>

  <!-- <RnatAddress> appears for IP addresses associated to and RNAT -->

  <RnatAddress href="/rnats/associations/{association identifier}"
   type="application/vnd.tmrk.cloud.rnatAssociation"/>

  <Reserved>{true | false}</Reserved>

</IpAddress>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1018
  Content-Type: application/vnd.tmrk.cloud.ipAddress
  x-tmrk-currentuser: /admin/users/101

x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 13:20:47 GMT

<IpAddress href="/ipAddresses/networks/1/10.0.4.60" name="10.0.4.60"
  type="application/vnd.tmrk.cloud.ipAddress" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/networks/1" type="application/vnd.tmrk.cloud.network" rel="up"/>

  </Links>

  <Actions>

    <Action href="/ipAddresses/networks/1/10.0.4.60/action/reserve" name="reserve"/>

    <Action href="/ipAddresses/networks/1/10.0.4.60/action/unreserve" name="unreserve"
     actionDisabled="disabled"/>

    <Action href="/ipAddresses/networks/1/10.0.4.60/action/sync" name="sync"
     actionDisabled="disabled"/>

  </Actions>

  <Host href="/networkHosts/1" name="Virtual Machine 1"
   type="application/vnd.tmrk.cloud.networkHost"/>

  <DetectedOn href="/networkHosts/3" name="Virtual Machine 3"
   type="application/vnd.tmrk.cloud.networkHost"/>

  <RnatAddress href="/rnats/associations/60" type="application/vnd.tmrk.cloud.rnatAssociation"/>
```

```
    <Reserved>false</Reserved>
  </IpAddress>
```

Return to *7.30 IP Address*.

Return to *7 Application Programming Interface Reference Guide*.

7.30.2 Action IP Addresses Configure Reservation

The IP Addresses Configure Reservation call configures the reserved state, reserved or not reserved, of IP addresses in a specified network. If successful, the call returns a 204 No Content header.

At least one <IpAddress> is required to be meaningful.

Note: IP addresses not included in the body of the call are unchanged.

<Reserved> is required on every <IpAddress> and sets the reserved status.

<Host>, <DetectedOn>, and <RnatAddress> are optional and ignored if present.

Request

```
POST http://{Terremark URI}/ipAddresses/networks/{network identifier}action/configureIpReservation
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/ipAddresses/networks/1/ …
  action/configureIpReservation
```

Body

```
<IpAddresses>
  <IpAddress href="/ipAddresses/networks/{network identifier}/{host IP address}" name="{host IP
    address}" type="application/vnd.tmrk.cloud.ipAddress"> <!-- Required -->
    <Host href="/networkHosts/{network host identifier}" name="{network host name}"
      type="application/vnd.tmrk.cloud.networkHost"/> <!-- Optional, ignored if present -->
    <DetectedOn href="/networkHosts/{different network host identifier}" name="{different network host
      name}" type="application/vnd.tmrk.cloud.networkHost"/> <!-- Optional, ignored if present -->
    <RnatAddress href="/rnats/associations/{association identifier}"
      type="application/vnd.tmrk.cloud.rnatAssociation"/> <!-- Optional, ignored if present -->
    <Reserved>{true | false}</Reserved> <!-- Required -->
  </IpAddress>
    ⋮
</IpAddresses>
```

EXAMPLE

```
<IpAddresses>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.34" name="10.0.4.34">
```

```
    <Reserved>false</Reserved>
  </IpAddress>
  <IpAddress href="/ipAddresses/networks/1/10.0.4.37" name="10.0.4.37">
    <Reserved>false</Reserved>
  </IpAddress>
</IpAddresses>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sun, 19 Jun 2011 16:50:18 GMT
```

Return to *7.30 IP Address*.

Return to *7 Application Programming Interface Reference Guide*.

7.30.3 Action IP Addresses Reserve

The IP Addresses Reserve call reserves a specified IP address in a specified network. If successful, the call returns a 204 No Content header.

Note: To reserve an IP address, the IP address must not be currently reserved, may not be assigned to host, may not be detected on a host, and may not be associated to a device reverse network address translation (RNAT).

Request

```
POST http://{Terremark URI}/ipAddresses/networks/{network identifier}/{host IP
  address}/action/reserve
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/ipAddresses/networks/1/10.0.4.52/action/reserve
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sun, 19 Jun 2011 16:50:18 GMT
```

Return to *7.30 IP Address*.

Return to *7 Application Programming Interface Reference Guide*.

7.30.4 Action IP Addresses Unreserve

The IP Addresses Unreserve call unreserves a specified IP address in a specified network. If successful, the call returns a 204 No Content header.

Note: To unreserve, the IP address must be reserved.

Request

```
POST http://{Terremark URI}/ipAddresses/networks/{network identifier}/{host IP
  address}/action/unreserved
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/ipAddresses/networks/1/10.0.4.34/action/unreserve
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sun, 19 Jun 2011 16:50:18 GMT
```

Return to *7.30 IP Address*.

Return to *7 Application Programming Interface Reference Guide*.

7.30.5 Action IP Addresses Sync

The IP Addresses Sync call synchronizes a specified IP address in a specified network as assigned to a host. If successful, the call returns a 204 No Content header.

Note: To synchronize, the host on which the IP address is detected may not be assigned to another IP address.

Request

```
POST http://{Terremark URI}/ipAddresses/networks/{network identifier}/{host IP address}/action/sync
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/ipAddresses/networks/1/10.0.4.52/action/sync
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sun, 19 Jun 2011 16:50:18 GMT
```

Return to *7.30 IP Address*.

Return to *7 Application Programming Interface Reference Guide*.

7.31 Administrative Organization

7.31.1 Get Administrative Organizations 871
7.31.2 Get Administrative Organizations by ID 884
7.31.3 Get Administrative Organizations Authentication Levels 898
7.31.4 Get Administrative Organizations Password Complexity Rules 899
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7.31.9 Action Administrative Organizations Enable Support Access 913
7.31.10 Action Administrative Organizations Disable Support Access 914

Advance to *7.32 User*.

This section contains the calls for the Administrative Organization entity.

Return to *7 Application Programming Interface Reference Guide*.

7.31.1 Get Administrative Organizations

The Get Administrative Organizations call returns administrative information regarding an organization.

Note: This call should have a solidus (forward slash, "/") at the end of the call.

<MultifactorSummary> occurs only when multifactor authentication licenses have been purchased.

<CustomRules> occurs under <PasswordComplexityRules> only when <RuleType>Custom<RuleType>.

Request

```
GET http://{Terremark URI}/admin/organizations/
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.organization; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AdminOrganizations href="/admin/organizations" type="application/vnd.tmrk.cloud.admin.organization;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AdminOrganization href="/admin/organizations/{organization identifier}" name="{organization name}"
    type="application/vnd.tmrk.cloud.admin.organization">

    <Links>

      <Link href="/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.organization" rel="alternate"/>

      <Link href="/admin/users/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.admin.user; type=collection" rel="down"/>

      <Link href="/admin/catalog/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>

      <Link href="/admin/catalog/organizations/{organization identifier}/log"
        type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection" rel="down"/>

      <Link href="/admin/organizations/{organization identifier}/auditLog"
        type="application/vnd.tmrk.cloud.admin.auditLog" rel="down"/>

      <Link href="/admin/contacts/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.admin.contact; type=collection" rel="down"/>

      <Link href="/admin/bandwidth/organizations/{organization identifier}/periods"
        type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" rel="down"/>

      <Link href="/admin/roles/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="down"/>
```

```
  <Link href="/admin/roles/organizations/{organization identifier}/businessOperations"
    type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="down"/>

  <Link href="/admin/tickets/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.ticket; type=collection" rel="down"/>

</Links>

<Actions>

  <Action href="/admin/sshKeys/organizations/{organization identifier}/action/createSshKey"
    name="createSshKey" type="application/vnd.tmrk.cloud.admin.createSshKey"/>

  <Action href="/admin/users/organizations/{organization identifier}/action/inviteUser"
    name="inviteUser" type="application/vnd.tmrk.cloud.admin.inviteUser"/>

  <Action href="/admin/organizations/{organization identifier}/action/createUser"
    name="createUser" type="application/vnd.tmrk.cloud.admin.createUser"/>

  <Action href="/admin/organizations/{organization identifier}/action/createApiUser"
    name="createApiUser" type="application/vnd.tmrk.cloud.admin.createApiUser"/>

  <Action href="/admin/roles/organizations/{organization identifier}/action/createRole"
    name="createRole" type="application/vnd.tmrk.cloud.admin.role"/>

  <Action href="/admin/tickets/organizations/{organization identifier}/action/createTicket"
    name="createTicket" type="application/vnd.tmrk.cloud.createTicket"/>

</Actions>

<SshKeys href="/admin/sshKeys/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.sshKey; type=collection">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/sshKeys/organizations/{organization identifier}/action/createSshKey"
      name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

  </Actions>

  <SshKey href="/admin/sshKeys/{SSH key identifier}" name="{SSH key name}"
    type="application/vnd.tmrk.cloud.admin.sshKey">

    <Default>{true | false}</Default>

    <FingerPrint>{SSH key fingerprint}</FingerPrint>

  </SshKey>

    ⋮

</SshKeys>

<MultifactorSummary>

  <Purchased>{multifactor authentication seats purchased}</Purchased>

  <Used>{multifactor authentication seats used}</Used>

</MultifactorSummary>
```

```
<SupportAccess>
  <Actions>
    <Action href="/admin/organizations/{organization identifier}/action/enableSupportAccess"
      name="enableSupportAccess"/>
    <Action href="/admin/organizations/{organization identifier}/action/disableSupportAccess"
      name="disableSupportAccess" actionDisabled="{noAccess | disabled}"/>
  </Actions>
  <Status>{Enabled | Disabled}</Status>
</SupportAccess>
<PasswordComplexityRules href="/admin/organizations/{organization
  identifier}/passwordComplexityRules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules">
  <Links>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/organizations/{organization identifier}/passwordComplexityRules"
      name="edit" type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>
  </Actions>
  <RuleType>{Default | Custom}</RuleType>
  <CustomRules>
    <MinimumCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumCharacters>
    <MinimumUpperCaseCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumUpperCaseCharacters>
    <MinimumLowerCaseCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumLowerCaseCharacters>
    <MinimumNumericCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
```

```
      </MinimumNumericCharacters>
      <MinimumSpecialCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MinimumSpecialCharacters>
      <MaximumConsecutiveCharactersFromPriorPassword>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MaximumConsecutiveCharactersFromPriorPassword>
      <MinimumLifetimeRestriction>
        <Enabled>{true | false}</Enabled>
        <Value>{lifetime restriction value}</Value>
        <Unit>{Hours | Days}</Unit>
      </MinimumLifetimeRestriction>
      <MinimumGenerationsBeforeReuse>
        <Enabled>{true | false}</Enabled>
        <Value>{number of different passwords before reuse permitted}</Value>
      </MinimumGenerationsBeforeReuse>
    </CustomRules>
    <Description>{textual description}</Description>
  </PasswordComplexityRules>
  <LoginBanner href="/admin/organizations/{organization identifier}/loginBanner"
    type="application/vnd.tmrk.cloud.admin.loginBanner">
    <Links>
      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/organizations/{organization identifier}/loginBanner" name="edit"
        type="application/vnd.tmrk.cloud.admin.loginBanner"/>
    </Actions>
    <Display>{true | false}false</Display>
    <Text>{login banner text}</Text>
  </LoginBanner>
  <AuthenticationLevels href="/admin/organizations/{organization identifier}/authenticationLevels"
    type="application/vnd.tmrk.cloud.admin.authenticationLevels">
    <Links>
```

```
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>

  </Actions>

  <BasicEnabled>{true | false}</BasicEnabled>

  <SHA1Enabled>{true | false}</SHA1Enabled>

  <SHA256Enabled>{true | false}</SHA256Enabled>

  <SHA512Enabled>{true | false}</SHA512Enabled>

</AuthenticationLevels>

<AlertNotification href="/admin/alertNotifications/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.alertNotification">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/alertRuleTemplates/" type="application/vnd.tmrk.cloud.alertRuleTemplate;
      type=collection" rel="down"/>

  </Links>

  <AlertRules href="/cloudapi/spec/admin/alertrules/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">

    <AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
      type="application/vnd.tmrk.cloud.admin.alertRule">

      <Links>

        <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

        <Link href="/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>

      </Links>

      <Actions>

        <Action href="/admin/alertrules/{alert rule identifier}" name="edit"
          type="application/vnd.tmrk.cloud.admin.alertRule"/>

        <Action href="/admin/alertrules/{alert rule identifier}" name="remove"/>

      </Actions>

      <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert
        rule template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

      <RuleGroup>{rule group name}</RuleGroup>
```

```
        <Threshold>
          <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
          <Value>{threshold value}</Value>
          <CompareType>{comparison operator}</CompareType>
        </Threshold>
        <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
        <Configuration>
          <Recipients>
            <Recipient>
              <Name>{recipient name}</Name>
              <Email>{user email local part}@{user email domain part}</Email>
            </Recipient>
              ⋮
          </Recipients>
        </Configuration>
      </AlertRule>
        ⋮
    </AlertNotification>
  </AdminOrganization>
    ⋮
</AdminOrganizations>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 11626
  Content-Type: application/vnd.tmrk.cloud.admin.organization; type=collection
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 29 Feb 2012 19:02:15 GMT

<AdminOrganizations href="/cloudapi/spec/admin/organizations/"
  type="application/vnd.tmrk.cloud.admin.organization; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AdminOrganization href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
    type="application/vnd.tmrk.cloud.admin.organization">

    <Links>

      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="alternate"/>

      <Link href="/cloudapi/spec/admin/users/organizations/1"
        type="application/vnd.tmrk.cloud.admin.user; type=collection" rel="down"/>

      <Link href="/cloudapi/spec/admin/catalog/organizations/1"
        type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>

      <Link href="/cloudapi/spec/admin/catalog/organizations/1/log"
```

```
    type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection" rel="down"/>

  <Link href="/cloudapi/spec/admin/organizations/1/auditlog"
    type="application/vnd.tmrk.cloud.admin.auditLog" rel="down"/>

  <Link href="/cloudapi/spec/admin/contacts/organizations/1"
    type="application/vnd.tmrk.cloud.admin.contact; type=collection" rel="down"/>

  <Link href="/cloudapi/spec/admin/bandwidth/organizations/1/periods"
    type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" rel="down"/>

  <Link href="/cloudapi/spec/admin/roles/organizations/1"
    type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="down"/>

  <Link href="/cloudapi/spec/admin/roles/organizations/1/businessoperations"
    type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="down"/>

  <Link href="/cloudapi/spec/admin/tickets/organizations/1"
    type="application/vnd.tmrk.cloud.admin.tickets" rel="down"/>

  <Link href="/cloudapi/spec/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog"
    rel="down"/>

</Links>

<Actions>

  <Action href="/cloudapi/spec/admin/sshkeys/organizations/1/action/createsshkey"
    name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

  <Action href="/cloudapi/spec/admin/organizations/1/action/inviteuser" name="inviteUser"
    type="application/vnd.tmrk.cloud.admin.inviteUser"/>

  <Action href="/cloudapi/spec/admin/organizations/1/action/createuser" name="createUser"
    type="application/vnd.tmrk.cloud.admin.createUser"/>

  <Action href="/cloudapi/spec/admin/organizations/1/action/createapiuser" name="createApiUser"
    type="application/vnd.tmrk.cloud.admin.createApiUser"/>

  <Action href="/cloudapi/spec/admin/roles/organizations/1/action/createrole" name="createRole"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <Action href="/cloudapi/spec/admin/tickets/organizations/1/action/createticket"
    name="createTicket" type="application/vnd.tmrk.cloud.createTicket"/>

</Actions>

<SshKeys href="/cloudapi/spec/admin/sshkeys/organizations/1"
  type="application/vnd.tmrk.cloud.admin.sshKey; type=collection">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/sshkeys/organizations/1/action/createsshkey"
      name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

  </Actions>

  <SshKey href="/cloudapi/spec/admin/sshkeys/2" name="Key 2"
```

```
    type="application/vnd.tmrk.cloud.admin.sshKey">
    <Default>true</Default>
    <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
  </SshKey>
  <SshKey href="/cloudapi/spec/admin/sshkeys/3" name="Key 3"
    type="application/vnd.tmrk.cloud.admin.sshKey">
    <Default>false</Default>
    <FingerPrint>ee:aa:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:a6</FingerPrint>
  </SshKey>
</SshKeys>
<MultifactorSummary>
  <Purchased>6</Purchased>
  <Used>3</Used>
</MultifactorSummary>
<SupportAccess>
  <Actions>
    <Action href="/cloudapi/spec/admin/organizations/1/action/enablesupportaccess"
      name="enableSupportAccess"/>
    <Action href="/cloudapi/spec/admin/organizations/1/action/disablesupportaccess"
      name="disableSupportAccess" actionDisabled="disabled"/>
  </Actions>
  <Status>Disabled</Status>
</SupportAccess>
<PasswordComplexityRules href="/cloudapi/spec/admin/organizations/1/passwordcomplexityrules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/organizations/1/passwordcomplexityrules" name="edit"
      type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>
  </Actions>
  <RuleType>Default</RuleType>
  <Description>Passwords must be at least eight characters long and can consist of any combination
    of characters. However, the password must contain at least one alphabetic character and one
    numeric character to be valid.</Description>
</PasswordComplexityRules>
<LoginBanner href="/cloudapi/spec/admin/organizations/1/loginbanner"
```

```
    type="application/vnd.tmrk.cloud.admin.loginBanner">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>

      <Action href="/cloudapi/spec/admin/organizations/1/loginbanner" name="edit"
        type="application/vnd.tmrk.cloud.admin.loginBanner"/>

    </Actions>

    <Display>false</Display>

    <Text>This is my login banner text.</Text>

  </LoginBanner>

  <AuthenticationLevels href="/cloudapi/spec/admin/organizations/1/authenticationlevels"
    type="application/vnd.tmrk.cloud.admin.authenticationLevels">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>

      <Action href="/cloudapi/spec/admin/organizations/1/authenticationlevels" name="edit"
        type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>

    </Actions>

    <BasicEnabled>true</BasicEnabled>

    <HMACSHA1Enabled>false</HMACSHA1Enabled>

    <HMACSHA256Enabled>false</HMACSHA256Enabled>

    <HMACSHA512Enabled>false</HMACSHA512Enabled>

  </AuthenticationLevels>

  <AlertNotification href="/cloudapi/spec/admin/alertnotifications/organizations/1"
    type="application/vnd.tmrk.cloud.admin.alertNotification">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

      <Link href="/cloudapi/spec/alertruletemplates/"
        type="application/vnd.tmrk.cloud.alertRuleTemplate; type=collection" rel="down"/>

    </Links>
```

```
<AlertRules href="/cloudapi/spec/admin/alertrules/organizations/1"
 type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">
 <AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
  type="application/vnd.tmrk.cloud.admin.alertRule">
  <Links>
   <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
   <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
    type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
   <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
    type="application/vnd.tmrk.cloud.admin.alertRule"/>
   <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>
  </Actions>
  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
   type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
   <Unit>Percent</Unit>
   <Value>50</Value>
   <CompareType>&gt;=</CompareType>
  </Threshold>
  <RuleAction>NotifyByEmail</RuleAction>
  <Configuration>
   <EmailConfiguration>
    <Recipients>
     <Recipient>
      <Name>Homer Simpson</Name>
      <Email>homer.simpson@gmail.com</Email>
     </Recipient>
     <Recipient>
      <Name>Bart Simpson</Name>
      <Email>bart.simpson@gmail.com</Email>
     </Recipient>
    </Recipients>
   </EmailConfiguration>
  </Configuration>
 </AlertRule>
```

```
<AlertRule href="/cloudapi/spec/admin/alertrules/2" name="High Processor Usage"
 type="application/vnd.tmrk.cloud.admin.alertRule">
 <Links>
  <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
   type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>
 </Links>
 <Actions>
  <Action href="/cloudapi/spec/admin/alertrules/2" name="edit"
   type="application/vnd.tmrk.cloud.admin.alertRule"/>
  <Action href="/cloudapi/spec/admin/alertrules/2" name="remove"/>
 </Actions>
 <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/3" name="High Processor Usage"
  type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
 <RuleGroup>Resources</RuleGroup>
 <Threshold>
  <Unit>Percent</Unit>
  <Value>67</Value>
  <CompareType>&gt;=</CompareType>
 </Threshold>
 <RuleAction>NotifyByEmail</RuleAction>
 <Configuration>
  <EmailConfiguration>
   <Recipients>
    <Recipient>
     <Name>Homer Simpson</Name>
     <Email>homer.simpson@gmail.com</Email>
    </Recipient>
    <Recipient>
     <Name>Bart Simpson</Name>
     <Email>bart.simpson@gmail.com</Email>
    </Recipient>
   </Recipients>
  </EmailConfiguration>
 </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/3" name="Processor Bursting"
 type="application/vnd.tmrk.cloud.admin.alertRule">
```

```
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/3" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/3" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/6" name="Processor Bursting"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Bursting/Not Bursting</Unit>
      <Value>1</Value>
      <CompareType>=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
  <AlertRule href="/cloudapi/spec/admin/alertrules/4" name="Memory Bursting"
    type="application/vnd.tmrk.cloud.admin.alertRule">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
```

```
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/4" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/4" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/5" name="Memory Bursting"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Bursting/Not Bursting</Unit>
      <Value>1</Value>
      <CompareType>=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
</AlertRules>
</AlertNotification>
</AdminOrganization>
</AdminOrganizations>
```


Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.2 Get Administrative Organizations by ID

The Get Administrative Organizations by ID call returns administrative information regarding a specified organization.

<MultifactorSummary> occurs only when multifactor authentication licenses have been purchased.

<CustomRules> occurs under <PasswordComplexityRules> only when <RuleType>Custom<RuleType>.

Live Specification Test Values

Condition	Outcome
organization identifier = 558899	Error: Null argument
organization identifier modulo 2 = 0	Support enabled
organization identifier modulo 2 = 0	Custom password complexity rule
organization identifier modulo 2 = 0	Display login banner is false

Request

```
GET http://{Terremark URI}/admin/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.organization
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AdminOrganization href="/admin/organizations/{organization identifier}" name="{organization name}"
  type="application/vnd.tmrk.cloud.admin.organization" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="alternate"/>

    <Link href="/admin/users/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.user; type=collection" rel="down"/>

    <Link href="/admin/catalog/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>

    <Link href="/admin/catalog/organizations/{organization identifier}/log"
```

```
    type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection" rel="down"/>

  <Link href="/admin/organizations/{organization identifier}/auditLog"
    type="application/vnd.tmrk.cloud.admin.auditLog" rel="down"/>

  <Link href="/admin/contacts/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.contact; type=collection" rel="down"/>

  <Link href="/admin/bandwidth/organizations/{organization identifier}/periods"
    type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" rel="down"/>

  <Link href="/admin/roles/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="down"/>

  <Link href="/admin/roles/organizations/{organization identifier}/businessOperations"
    type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="down"/>

  <Link href="/admin/tickets/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.ticket; type=collection" rel="down"/>

</Links>

<Actions>

  <Action href="/admin/sshKeys/organizations/{organization identifier}/action/createSshKey"
    name="createSshKey" type="application/vnd.tmrk.cloud.admin.createSshKey"/>

  <Action href="/admin/users/organizations/{organization identifier}/action/inviteUser"
    name="inviteUser" type="application/vnd.tmrk.cloud.admin.inviteUser"/>

  <Action href="/admin/organizations/{organization identifier}/action/createUser" name="createUser"
    type="application/vnd.tmrk.cloud.admin.createUser"/>

  <Action href="/admin/organizations/{organization identifier}/action/createApiUser"
    name="createApiUser" type="application/vnd.tmrk.cloud.admin.createApiUser"/>

  <Action href="/admin/roles/organizations/{organization identifier}/action/createRole"
    name="createRole" type="application/vnd.tmrk.cloud.admin.role"/>

  <Action href="/admin/tickets/organizations/{organization identifier}/action/createTicket"
    name="createTicket" type="application/vnd.tmrk.cloud.createTicket"/>

</Actions>

<SshKeys href="/admin/sshKeys/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.sshKey; type=collection">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/sshKeys/organizations/{organization identifier}/action/createSshKey"
      name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

  </Actions>

  <SshKey href="/admin/sshKeys/{SSH key identifier}" name="{SSH key name}"
    type="application/vnd.tmrk.cloud.admin.sshKey">

    <Default>{true | false}</Default>
```

```
      <FingerPrint>{SSH key fingerprint}</FingerPrint>
    </SshKey>
      ⋮
  </SshKeys>
  <MultifactorSummary>
    <Purchased>{multifactor authentication seats purchased}</Purchased>
    <Used>{multifactor authentication seats used}</Used>
  </MultifactorSummary>
  <SupportAccess>
    <Actions>
      <Action href="/admin/organizations/{organization identifier}/action/enableSupportAccess"
        name="enableSupportAccess"/>
      <Action href="/admin/organizations/{organization identifier}/action/disableSupportAccess"
        name="disableSupportAccess" actionDisabled="{noAccess | disabled}"/>
    </Actions>
    <Status>{Enabled | Disabled}</Status>
  </SupportAccess>
  <PasswordComplexityRules href="/admin/organizations/{organization
    identifier}/passwordComplexityRules"
    type="application/vnd.tmrk.cloud.admin.passwordComplexityRules">
    <Links>
      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/organizations/{organization identifier}/passwordComplexityRules"
        name="edit" type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>
    </Actions>
    <RuleType>{Default | Custom}</RuleType>
    <CustomRules>
      <MinimumCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MinimumCharacters>
      <MinimumUpperCaseCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
```

```
      </MinimumUpperCaseCharacters>
      <MinimumLowerCaseCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MinimumLowerCaseCharacters>
      <MinimumNumericCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MinimumNumericCharacters>
      <MinimumSpecialCharacters>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MinimumSpecialCharacters>
      <MaximumConsecutiveCharactersFromPriorPassword>
        <Enabled>{true | false}</Enabled>
        <Value>{character count}</Value>
      </MaximumConsecutiveCharactersFromPriorPassword>
      <MinimumLifetimeRestriction>
        <Enabled>{true | false}</Enabled>
        <Value>{lifetime restriction value}</Value>
        <Unit>{Hours | Days}</Unit>
      </MinimumLifetimeRestriction>
      <MinimumGenerationsBeforeReuse>
        <Enabled>{true | false}</Enabled>
        <Value>{number of different passwords before reuse permitted}</Value>
      </MinimumGenerationsBeforeReuse>
    </CustomRules>
    <Description>{textual description}</Description>
  </PasswordComplexityRules>
  <LoginBanner href="/admin/organizations/{organization identifier}/loginBanner"
    type="application/vnd.tmrk.cloud.admin.loginBanner">
    <Links>
      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
```

```
    <Action href="/admin/organizations/{organization identifier}/loginBanner" name="edit"
      type="application/vnd.tmrk.cloud.admin.loginBanner"/>

  </Actions>

  <Display>{true | false}false</Display>

  <Text>{login banner text}</Text>

</LoginBanner>

<AuthenticationLevels href="/admin/organizations/{organization identifier}/authenticationLevels"
  type="application/vnd.tmrk.cloud.admin.authenticationLevels">

  <Links>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>

  </Actions>

  <BasicEnabled>{true | false}</BasicEnabled>

  <SHA1Enabled>{true | false}</SHA1Enabled>

  <SHA256Enabled>{true | false}</SHA256Enabled>

  <SHA512Enabled>{true | false}</SHA512Enabled>

</AuthenticationLevels>

<AlertNotification href="/admin/alertNotifications/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.alertNotification">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/alertRuleTemplates/" type="application/vnd.tmrk.cloud.alertRuleTemplate;
      type=collection" rel="down"/>

  </Links>

  <AlertRules href="/cloudapi/spec/admin/alertrules/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">

    <AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
      type="application/vnd.tmrk.cloud.admin.alertRule">

      <Links>

        <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

        <Link href="/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>
```

```
        </Links>
          <Actions>
            <Action href="/admin/alertrules/{alert rule identifier}" name="edit"
              type="application/vnd.tmrk.cloud.admin.alertRule"/>
            <Action href="/admin/alertrules/{alert rule identifier}" name="remove"/>
          </Actions>
        <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert
          rule template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
        <RuleGroup>{rule group name}</RuleGroup>
        <Threshold>
          <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
          <Value>{threshold value}</Value>
          <CompareType>{comparison operator}</CompareType>
        </Threshold>
        <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
        <Configuration>
          <Recipients>
            <Recipient>
              <Name>{recipient name}</Name>
              <Email>{user email local part}@{user email domain part}</Email>
            </Recipient>
              ⋮
          </Recipients>
        </Configuration>
      </AlertRule>
        ⋮
    </AlertNotification>
  </AdminOrganization>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Type: application/vnd.tmrk.cloud.admin.organization
    x-tmrk-currentuser: /cloudapi/spec/admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 29 Feb 2012 19:09:29 GMT
  <AdminOrganization href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
    type="application/vnd.tmrk.cloud.admin.organization" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="alternate"/>
```

```
    <Link href="/cloudapi/spec/admin/users/organizations/2"
      type="application/vnd.tmrk.cloud.admin.user; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/catalog/organizations/2"
      type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/catalog/organizations/2/log"
      type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/organizations/2/auditlog"
      type="application/vnd.tmrk.cloud.admin.auditLog" rel="down"/>

    <Link href="/cloudapi/spec/admin/contacts/organizations/2"
      type="application/vnd.tmrk.cloud.admin.contact; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/bandwidth/organizations/2/periods"
      type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" rel="down"/>

    <Link href="/cloudapi/spec/admin/roles/organizations/2"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/roles/organizations/2/businessoperations"
      type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/tickets/organizations/2"
      type="application/vnd.tmrk.cloud.admin.tickets" rel="down"/>

    <Link href="/cloudapi/spec/alerts/organizations/2" type="application/vnd.tmrk.cloud.alertLog"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/sshkeys/organizations/2/action/createsshkey"
      name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

    <Action href="/cloudapi/spec/admin/organizations/2/action/inviteuser" name="inviteUser"
      type="application/vnd.tmrk.cloud.admin.inviteUser"/>

    <Action href="/cloudapi/spec/admin/organizations/2/action/createuser" name="createUser"
      type="application/vnd.tmrk.cloud.admin.createUser"/>

    <Action href="/cloudapi/spec/admin/organizations/2/action/createapiuser" name="createApiUser"
      type="application/vnd.tmrk.cloud.admin.createApiUser"/>

    <Action href="/cloudapi/spec/admin/roles/organizations/2/action/createrole" name="createRole"
      type="application/vnd.tmrk.cloud.admin.role"/>

    <Action href="/cloudapi/spec/admin/tickets/organizations/2/action/createticket"
      name="createTicket" type="application/vnd.tmrk.cloud.createTicket"/>

  </Actions>

  <SshKeys href="/cloudapi/spec/admin/sshkeys/organizations/2"
    type="application/vnd.tmrk.cloud.admin.sshKey; type=collection">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>
```

```
    <Action href="/cloudapi/spec/admin/sshkeys/organizations/2/action/createsshkey"
      name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>

  </Actions>

  <SshKey href="/cloudapi/spec/admin/sshkeys/3" name="Key 3"
    type="application/vnd.tmrk.cloud.admin.sshKey">

    <Default>true</Default>

    <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>

  </SshKey>

  <SshKey href="/cloudapi/spec/admin/sshkeys/4" name="Key 4"
    type="application/vnd.tmrk.cloud.admin.sshKey">

    <Default>false</Default>

    <FingerPrint>ee:aa:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:a6</FingerPrint>

  </SshKey>

</SshKeys>

<MultifactorSummary>

  <Purchased>7</Purchased>

  <Used>4</Used>

</MultifactorSummary>

<SupportAccess>

  <Actions>

    <Action href="/cloudapi/spec/admin/organizations/2/action/enablesupportaccess"
      name="enableSupportAccess" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/organizations/2/action/disablesupportaccess"
      name="disableSupportAccess"/>

  </Actions>

  <Status>Enabled</Status>

</SupportAccess>

<PasswordComplexityRules href="/cloudapi/spec/admin/organizations/2/passwordcomplexityrules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/organizations/2/passwordcomplexityrules" name="edit"
      type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>

  </Actions>

  <RuleType>Custom</RuleType>
```

```
    <CustomRules>
      <MinimumCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumCharacters>
      <MinimumUpperCaseCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumUpperCaseCharacters>
      <MinimumLowerCaseCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumLowerCaseCharacters>
      <MinimumNumericCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumNumericCharacters>
      <MinimumSpecialCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumSpecialCharacters>
      <MaximumConsecutiveCharactersFromPriorPassword>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MaximumConsecutiveCharactersFromPriorPassword>
      <MinimumLifetimeRestriction>
        <Enabled>true</Enabled>
        <Value>2</Value>
        <Unit>Days</Unit>
      </MinimumLifetimeRestriction>
      <MinimumGenerationsBeforeReuse>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumGenerationsBeforeReuse>
    </CustomRules>
    <Description>The password must be at least 2 character(s).&#xD;
    The password must contain at least 2 lower case character(s).&#xD;
```

```
    The password must be different from your last 2 password(s).&#xD;
    The password cannot contain more than 2 characters in sequence from your last password.&#xD;
    The password must contain at least 2 upper case character(s).&#xD;
    The password must contain at least 2 number character(s).&#xD;
    The password must contain at least 2 special character(s).&#xD;
    The password must remain at least 2 days.&#xD;
    </Description>
  </PasswordComplexityRules>
  <LoginBanner href="/cloudapi/spec/admin/organizations/2/loginbanner"
    type="application/vnd.tmrk.cloud.admin.loginBanner">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/organizations/2/loginbanner" name="edit"
        type="application/vnd.tmrk.cloud.admin.loginBanner"/>
    </Actions>
    <Display>true</Display>
    <Text>This is my login banner text.</Text>
  </LoginBanner>
  <AuthenticationLevels href="/cloudapi/spec/admin/organizations/2/authenticationlevels"
    type="application/vnd.tmrk.cloud.admin.authenticationLevels">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/organizations/2/authenticationlevels" name="edit"
        type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>
    </Actions>
    <BasicEnabled>false</BasicEnabled>
    <HMACSHA1Enabled>true</HMACSHA1Enabled>
    <HMACSHA256Enabled>false</HMACSHA256Enabled>
    <HMACSHA512Enabled>false</HMACSHA512Enabled>
  </AuthenticationLevels>
```

```
<AlertNotification href="/cloudapi/spec/admin/alertnotifications/organizations/2"
 type="application/vnd.tmrk.cloud.admin.alertNotification">

 <Links>

  <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>

  <Link href="/cloudapi/spec/alertruletemplates/"
   type="application/vnd.tmrk.cloud.alertRuleTemplate; type=collection" rel="down"/>

 </Links>

 <AlertRules href="/cloudapi/spec/admin/alertrules/organizations/2"
  type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">

  <AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
   type="application/vnd.tmrk.cloud.admin.alertRule">

   <Links>

    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
     type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
     type="application/vnd.tmrk.cloud.organization" rel="up"/>

   </Links>

   <Actions>

    <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
     type="application/vnd.tmrk.cloud.admin.alertRule"/>

    <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>

   </Actions>

   <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

   <RuleGroup>Resources</RuleGroup>

   <Threshold>

    <Unit>Percent</Unit>

    <Value>50</Value>

    <CompareType>&gt;=</CompareType>

   </Threshold>

   <RuleAction>NotifyByEmail</RuleAction>

   <Configuration>

    <EmailConfiguration>

     <Recipients>

      <Recipient>

       <Name>Homer Simpson</Name>

       <Email>homer.simpson@gmail.com</Email>

      </Recipient>
```

```
        <Recipient>
          <Name>Bart Simpson</Name>
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/2" name="High Processor Usage"
  type="application/vnd.tmrk.cloud.admin.alertRule">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/alertrules/2" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>
    <Action href="/cloudapi/spec/admin/alertrules/2" name="remove"/>
  </Actions>
  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/3" name="High Processor Usage"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
    <Unit>Percent</Unit>
    <Value>67</Value>
    <CompareType>&gt;=</CompareType>
  </Threshold>
  <RuleAction>NotifyByEmail</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
          <Name>Homer Simpson</Name>
          <Email>homer.simpson@gmail.com</Email>
        </Recipient>
        <Recipient>
          <Name>Bart Simpson</Name>
```

```
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/3" name="Processor Bursting"
  type="application/vnd.tmrk.cloud.admin.alertRule">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/alertrules/3" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>
    <Action href="/cloudapi/spec/admin/alertrules/3" name="remove"/>
  </Actions>
  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/6" name="Processor Bursting"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
    <Unit>Bursting/Not Bursting</Unit>
    <Value>1</Value>
    <CompareType>=</CompareType>
  </Threshold>
  <RuleAction>NotifyByEmail</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
          <Name>Homer Simpson</Name>
          <Email>homer.simpson@gmail.com</Email>
        </Recipient>
        <Recipient>
          <Name>Bart Simpson</Name>
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
```

```
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/4" name="Memory Bursting"
 type="application/vnd.tmrk.cloud.admin.alertRule">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/alertrules/4" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>
    <Action href="/cloudapi/spec/admin/alertrules/4" name="remove"/>
  </Actions>
  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/5" name="Memory Bursting"
   type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
    <Unit>Bursting/Not Bursting</Unit>
    <Value>1</Value>
    <CompareType>=</CompareType>
  </Threshold>
  <RuleAction>NotifyByEmail</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
          <Name>Homer Simpson</Name>
          <Email>homer.simpson@gmail.com</Email>
        </Recipient>
        <Recipient>
          <Name>Bart Simpson</Name>
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
```

```
        </Configuration>
      </AlertRule>
    </AlertRules>
  </AlertNotification>
</AdminOrganization>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.3 Get Administrative Organizations Authentication Levels

The Get Administrative Organizations Authentication Levels call returns information regarding the authentication levels permitted for accessing the API in an organization.

Authentication levels define the methods permitted for accessing the API as described in *3 Security Model*.

Request

```
GET http://{Terremark URI}/admin/organizations/{organization identifier}/authenticationLevels
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/1/authenticationLevels
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.authenticationLevels
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AuthenticationLevels href="/admin/organizations/{organization identifier}/authenticationLevels"
  type="application/vnd.tmrk.cloud.admin.authenticationLevels"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>

  </Actions>
```

```
  <BasicEnabled>{true | false}</BasicEnabled>
  <SHA1Enabled>{true | false}</SHA1Enabled>
  <SHA256Enabled>{true | false}</SHA256Enabled>
  <SHA512Enabled>{true | false}</SHA512Enabled>
</AuthenticationLevels>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 799
  Content-Type: application/vnd.tmrk.cloud.admin.authenticationLevels
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 18 Oct 2011 22:06:38 GMT
<AuthenticationLevels href="/admin/organizations/1/authenticationLevels"
  type="application/vnd.tmrk.cloud.admin.authenticationLevels"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/organizations/1/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>
  </Actions>
  <BasicEnabled>true</BasicEnabled>
  <SHA1Enabled>false</SHA1Enabled>
  <SHA256Enabled>false</SHA256Enabled>
  <SHA512Enabled>false</SHA512Enabled>
</AuthenticationLevels>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.4 Get Administrative Organizations Password Complexity Rules

The Get Administrative Organizations Password Complexity Rules call returns administrative information regarding the password complexity rules for a specified organization.

<CustomRules> occurs only when <RuleType>Custom<RuleType>.

Live Specification Test Values

Condition	Outcome
organization identifier = 558899	Error: Null argument
organization identifier modulo 2 = 0	Custom password complexity rule

Request

```
GET http://{Terremark URI}/admin/organizations/{organization identifier}/passwordComplexityRules
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/2/passwordComplexityRules
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.passwordComplexityRules
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PasswordComplexityRules href="/admin/organizations/{organization
  identifier}/passwordComplexityRules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/passwordComplexityRules" name="edit"
      type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>

  </Actions>

  <RuleType>{Default | Custom}</RuleType>

  <CustomRules>

    <MinimumCharacters>

      <Enabled>{true | false}</Enabled>

      <Value>{character count}</Value>

    </MinimumCharacters>

    <MinimumUpperCaseCharacters>

      <Enabled>{true | false}</Enabled>
```

```
      <Value>{character count}</Value>
    </MinimumUpperCaseCharacters>
    <MinimumLowerCaseCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumLowerCaseCharacters>
    <MinimumNumericCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumNumericCharacters>
    <MinimumSpecialCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumSpecialCharacters>
    <MaximumConsecutiveCharactersFromPriorPassword>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MaximumConsecutiveCharactersFromPriorPassword>
    <MinimumLifetimeRestriction>
      <Enabled>{true | false}</Enabled>
      <Value>{lifetime restriction value}</Value>
      <Unit>{Hours | Days}</Unit>
    </MinimumLifetimeRestriction>
    <MinimumGenerationsBeforeReuse>
      <Enabled>{true | false}</Enabled>
      <Value>{number of different passwords before reuse permitted}</Value>
    </MinimumGenerationsBeforeReuse>
  </CustomRules>
  <Description>{textual description}</Description>
</PasswordComplexityRules>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1747
  Content-Type: application/vnd.tmrk.cloud.admin.passwordComplexityRules
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 20:38:28 GMT

<PasswordComplexityRules href="/admin/organizations/2/passwordComplexityRules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"
```

```
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
<Links>
  <Link href="/organizations/2" name="Organization 2" type="application/vnd.tmrk.cloud.organization"
    rel="up"/>
  <Link href="/admin/organizations/2" name="Organization 2"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
</Links>
<Actions>
  <Action href="/admin/organizations/2/passwordComplexityRules" name="edit"
    type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>
</Actions>
<RuleType>Custom</RuleType>
<CustomRules>
  <MinimumCharacters>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MinimumCharacters>
  <MinimumUpperCaseCharacters>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MinimumUpperCaseCharacters>
  <MinimumLowerCaseCharacters>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MinimumLowerCaseCharacters>
  <MinimumNumericCharacters>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MinimumNumericCharacters>
  <MinimumSpecialCharacters>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MinimumSpecialCharacters>
  <MaximumConsecutiveCharactersFromPriorPassword>
    <Enabled>true</Enabled>
    <Value>2</Value>
  </MaximumConsecutiveCharactersFromPriorPassword>
  <MinimumLifetimeRestriction>
```

```
      <Enabled>true</Enabled>
      <Value>2</Value>
      <Unit>Days</Unit>
    </MinimumLifetimeRestriction>
    <MinimumGenerationsBeforeReuse>
      <Enabled>true</Enabled>
      <Value>2</Value>
    </MinimumGenerationsBeforeReuse>
  </CustomRules>
  <Description>The password must be at least 2 character(s).&#xD;&#xA;The password must contain at
    least 2 lower case character(s).&#xD;&#xA;The password must be different from your last 2
    password(s).&#xD;&#xA;The password cannot contain more than 2 characters in sequence from your
    last password.&#xD;&#xA;The password must contain at least 2 upper case character(s).&#xD;&#xA;The
    password must contain at least 2 number character(s).&#xD;&#xA;The password must contain at least
    2 special character(s).</Description>
</PasswordComplexityRules>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.5 Get Administrative Organizations Login Banner

The Get Administrative Organizations Login Banner call returns administrative information regarding the login banner for a specified organization.

Live Specification Test Values

Condition	Outcome
organization identifier = 558899	Error: Null argument
organization identifier modulo 2 = 0	Display login banner is true

Request

```
GET http://{Terremark URI}/admin/organizations/{organization identifier}/loginBanner
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/1/loginBanner
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.organization
  x-tmrk-currentuser: /admin/users/{user identifier}
```

```
  x-tmrk-token: {token}
  Date: {timestamp of response}

<LoginBanner href="/admin/organizations/1/loginBanner"
  type="application/vnd.tmrk.cloud.admin.loginBanner" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/loginBanner" name="edit"/>

  </Actions>

  <Display>{true | false}</Display>

  <Text>{text}</Text>

</LoginBanner>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 674
  Content-Type: application/vnd.tmrk.cloud.admin.loginBanner
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 07 Sep 2011 20:26:49 GMT

<LoginBanner href="/admin/organizations/1/loginBanner"
  type="application/vnd.tmrk.cloud.admin.loginBanner" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Actions>

    <Action href="/admin/organizations/1/loginBanner" name="edit"/>

  </Actions>

  <Display>false</Display>

  <Text>This is my login banner text.</Text>

</LoginBanner>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.6 Action Administrative Organizations Edit Authentication Levels

The Action Administrative Organizations Edit Authentication Levels call edits the authentication levels permitted for accessing the API in an organization. If successful, the call returns information regarding the authentication levels that were modified.

Authentication levels define the methods permitted for accessing the API as described in *3 Security Model*.

Request

```
PUT http://{Terremark URI}/admin/organizations/{organization identifier}/authenticationLevels
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/organizations/1/authenticationLevels
```

Body

```
<AuthenticationLevels>
  <BasicEnabled>{true | false}</BasicEnabled> <!-- Required -->
  <SHA1Enabled>{true | false}</SHA1Enabled> <!-- Required -->
  <SHA256Enabled>{true | false}</SHA256Enabled> <!-- Required -->
  <SHA512Enabled>{true | false}</SHA512Enabled> <!-- Required -->
</AuthenticationLevels>
```

EXAMPLE

```
<AuthenticationLevels>
  <BasicEnabled>false</BasicEnabled>
  <SHA1Enabled>false</SHA1Enabled>
  <SHA256Enabled>true</SHA256Enabled>
  <SHA512Enabled>true</SHA512Enabled>
</AuthenticationLevels>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.authenticationLevels
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AuthenticationLevels href="/admin/organizations/{organization identifier}/authenticationLevels"
  type="application/vnd.tmrk.cloud.admin.authenticationLevels"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/organizations/{organization identifier}/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>
  </Actions>
  <BasicEnabled>{true | false}</BasicEnabled>
  <SHA1Enabled>{true | false}</SHA1Enabled>
  <SHA256Enabled>{true | false}</SHA256Enabled>
  <SHA512Enabled>{true | false}</SHA512Enabled>
```

```
</AuthenticationLevels>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 798
  Content-Type: application/vnd.tmrk.cloud.admin.authenticationLevels
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 18 Oct 2011 22:35:38 GMT

<AuthenticationLevels href="/admin/organizations/1/authenticationLevels"
  type="application/vnd.tmrk.cloud.admin.authenticationLevels"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/1/authenticationLevels" name="edit"
      type="application/vnd.tmrk.cloud.admin.authenticationLevels"/>

  </Actions>

  <BasicEnabled>false</BasicEnabled>

  <SHA1Enabled>false</SHA1Enabled>

  <SHA256Enabled>true</SHA256Enabled>

  <SHA512Enabled>true</SHA512Enabled>

</AuthenticationLevels>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.7 Action Administrative Organizations Edit Password Complexity Rules

The Action Administrative Organizations Edit Password Complexity Rules call edits the rules regarding password complexity. If successful, the call returns information regarding the password complexity rules that were modified.

The element <CustomRules> should not be present if <RuleType>Default</RuleType>. The element <CustomRules> must be present and valued if <RuleType>Custom</RuleType>. If <CustomRules> is present, all of its subordinate elements must be present. Use <Enabled>true</Enabled> to enable a rule and <Enabled>false</Enabled> to disable a rule. For each rule enabled, <Value> must be present and have a value between 1 and 99 for all but <MinimumLifetimeRestriction>, which must have a value between 1 and 999. For each rule disabled, <Value> is optional and ignored if present.

Note: If a rule is disabled and <Value> is present but empty(no value), an error is returned.

Live Specification Test Values

Condition	Outcome
organization identifier modulo 2 = 0	Custom password complexity rule

Request

```
PUT http://{Terremark URI}/admin/organizations/{organization identifier}/passwordComplexityRules
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/organizations/1/passwordComplexityRules
```

Body

```
<PasswordComplexityRules>
  <RuleType>{Default | Custom}</RuleType> <!-- Required -->
  <CustomRules> <!-- Required only if <RuleType>Custom</RuleType> -->
    <MinimumCharacters> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
    </MinimumCharacters>
    <MinimumUpperCaseCharacters> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
    </MinimumUpperCaseCharacters>
    <MinimumLowerCaseCharacters> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
    </MinimumLowerCaseCharacters>
    <MinimumNumericCharacters> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
    </MinimumNumericCharacters>
    <MinimumSpecialCharacters> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
    </MinimumSpecialCharacters>
    <MaximumConsecutiveCharactersFromPriorPassword> <!-- Required -->
      <Enabled>{true | false}</Enabled> <!-- Required -->
      <Value>{character count}</Value> <!-- Required if <Enabled>true</Enabled> -->
```

```
      </MaximumConsecutiveCharactersFromPriorPassword>
      <MinimumLifetimeRestriction> <!-- Required -->
        <Enabled>{true | false}</Enabled> <!-- Required -->
        <Value>{lifetime restriction value}</Value> <!-- Required if <Enabled>true</Enabled> -->
        <Unit>{Hours | Days}</Unit> <!-- Required if <Enabled>true</Enabled> -->
      </MinimumLifetimeRestriction>
      <MinimumGenerationsBeforeReuse> <!-- Required -->
        <Enabled>{true | false}</Enabled> <!-- Required -->
        <Value>{number of different passwords before reuse permitted}</Value> <!-- Required if
          <Enabled>true</Enabled> -->
      </MinimumGenerationsBeforeReuse>
    </CustomRules>
    <Description>{textual description}</Description>
  </PasswordComplexityRules>
```

EXAMPLE

```
  <PasswordComplexityRules>
    <RuleType>Custom</RuleType>
    <CustomRules>
      <MinimumCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumCharacters>
      <MinimumUpperCaseCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumUpperCaseCharacters>
      <MinimumLowerCaseCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumLowerCaseCharacters>
      <MinimumNumericCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
      </MinimumNumericCharacters>
      <MinimumSpecialCharacters>
        <Enabled>true</Enabled>
        <Value>2</Value>
```

```
    </MinimumSpecialCharacters>
    <MaximumConsecutiveCharactersFromPriorPassword>
      <Enabled>true</Enabled>
      <Value>2</Value>
    </MaximumConsecutiveCharactersFromPriorPassword>
    <MinimumLifetimeRestriction>
      <Enabled>true</Enabled>
      <Value>2</Value>
      <Unit>Days</Unit>
    </MinimumLifetimeRestriction>
    <MinimumGenerationsBeforeReuse>
      <Enabled>true</Enabled>
      <Value>2</Value>
    </MinimumGenerationsBeforeReuse>
  </CustomRules>
  <Description>Rule description</Description>
</PasswordComplexityRules>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/xml; charset=utf-8
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<PasswordComplexityRules href="/admin/organizations/{organization
  identifier}/passwordComplexityRules"
  type="application/vnd.tmrk.cloud.admin.passwordComplexityRules">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/passwordComplexityRules" name="edit"
      type="application/vnd.tmrk.cloud.admin.passwordComplexityRules"/>

  </Actions>

  <RuleType>{Default | Custom}</RuleType>

  <CustomRules>

    <MinimumCharacters>
```

```
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumCharacters>
    <MinimumUpperCaseCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumUpperCaseCharacters>
    <MinimumLowerCaseCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumLowerCaseCharacters>
    <MinimumNumericCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumNumericCharacters>
    <MinimumSpecialCharacters>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MinimumSpecialCharacters>
    <MaximumConsecutiveCharactersFromPriorPassword>
      <Enabled>{true | false}</Enabled>
      <Value>{character count}</Value>
    </MaximumConsecutiveCharactersFromPriorPassword>
    <MinimumLifetimeRestriction>
      <Enabled>{true | false}</Enabled>
      <Value>{lifetime restriction value}</Value>
      <Unit>{Hours | Days}</Unit>
    </MinimumLifetimeRestriction>
    <MinimumGenerationsBeforeReuse>
      <Enabled>{true | false}</Enabled>
      <Value>{number of different passwords before reuse permitted}</Value>
    </MinimumGenerationsBeforeReuse>
  </CustomRules>
  <Description>{textual description}</Description>
</PasswordComplexityRules>
```

EXAMPLE

```
HTTP/1.1 200 OK
```

```
  Content-Length: 639
  Content-Type: application/xml; charset=utf-8
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 15:27:10 GMT

<PasswordComplexityRules xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <RuleType>Custom</RuleType>

  <CustomRules>

    <MinimumCharacters>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MinimumCharacters>

    <MinimumUpperCaseCharacters>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MinimumUpperCaseCharacters>

    <MinimumLowerCaseCharacters>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MinimumLowerCaseCharacters>

    <MinimumNumericCharacters>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MinimumNumericCharacters>

    <MinimumSpecialCharacters>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MinimumSpecialCharacters>

    <MaximumConsecutiveCharactersFromPriorPassword>

      <Enabled>true</Enabled>

      <Value>2</Value>

    </MaximumConsecutiveCharactersFromPriorPassword>

    <MinimumLifetimeRestriction>

      <Enabled>true</Enabled>

      <Value>2</Value>

      <Unit>Days</Unit>

    </MinimumLifetimeRestriction>

    <MinimumGenerationsBeforeReuse>
```

```
      <Enabled>true</Enabled>
      <Value>2</Value>
    </MinimumGenerationsBeforeReuse>
  </CustomRules>
  <Description>Rule description</Description>
</PasswordComplexityRules>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.8 Action Administrative Organizations Edit Login Banner

The Action Administrative Organizations Edit Login Banner call changes the state for the display of the login banner. If successful, the call returns information regarding the login banner that was modified.

<Display> is a required element.

<Text> is optional. If <Text> is not present, no change is made to the text. If <Text> is empty, present as <Text/> or <Text>

</Text>, the text field is cleared.

Note: If <Display>true</Display> and <Text> has no value, the login banner will appear when users login to the user interface but with no text displayed.

Note: To remove the login banner text an empty element, <Text/>, must be in the body.

Live Specification Test Values

Condition	Outcome
organization identifier modulo 2 = 0	Display login banner is false

Request

```
PUT http://{Terremark URI}/admin/organizations/{organization identifier}/loginBanner
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/organizations/1/loginBanner
```

Body

```
<LoginBanner>
  <Display>{true | false}</Display> <!-- Required – show/hide banner upon console login -->
  <Text>{banner text}</Text> <!-- Optional; text to display -->
</LoginBanner>
```

EXAMPLE

```
<LoginBanner>
  <Display>true</Display>
  <Text>banner text</Text>
</LoginBanner>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/xml; charset=utf-8
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<LoginBanner xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Display>true</Display>
  <Text>banner text</Text>
</LoginBanner>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 126
  Content-Type: application/xml; charset=utf-8
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 14:56:14 GMT
<LoginBanner xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Display>true</Display>
  <Text>banner text</Text>
</LoginBanner>
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.9 Action Administrative Organizations Enable Support Access

The Action Administrative Organizations Enable Support Access call enables access to the support module for a specified organization. If successful, the call returns a 204 No Content response header.

Live Specification Test Values

Condition	Outcome
organization identifier = 558899	Error: null argument
organization identifier mod 2 = 0	Support enabled

Request

```
POST http://{Terremark URI}/admin/organizations/{organization identifier}/action/enableSupportAccess
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/organizations/1/action/enableSupportAccess
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 07 Sep 2011 20:30:41 GMT
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.31.10 Action Administrative Organizations Disable Support Access

The Action Administrative Organizations Disable Support Access call disables access to the support module for a specified organization. If successful, the call returns a 204 No Content response header.

Live Specification Test Values

Condition	Outcome
organization identifier = 558899	Error: Null argument
organization identifier modulo 2 = 0	Support enabled

Request

```
POST http://{Terremark URI}/admin/organizations/{organization identifier}/action/disableSupportAccess
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/organizations/2/action/disableSupportAccess
```

Body

none

Response

```
HTTP/1.1 204 No Content
```

```
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
```

EXAMPLE

```
  HTTP/1.1 204 No Content
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 09 Jun 2011 14:45:25 GMT
```

Return to *7.31 Administrative Organization*.

Return to *7 Application Programming Interface Reference Guide*.

7.32 User

7.32.1 Get Users 916
7.32.2 Get Users by ID 934
7.32.3 Get Users Security Questions 940
7.32.4 Get Users Credentials 942
7.32.5 Action Users Invite 944
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7.32.10 Action Users Enable Alerts 981
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7.32.15 Action Users Disable Account 1009
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7.32.18 Action Users Remove 1025

Advance to *7.33 Contact*.

This section contains the calls for the User entity.

Return to *7 Application Programming Interface Reference Guide*.

7.32.1 Get Users

The Get Users call returns information regarding all users in an organization.

<Status> reflects whether the user or API key is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Every <Environment> for an organization is listed under <UserRole>, including environments which are inactive or STARred or otherwise inaccessible to normal use. However, billing information remains available for some time after an environment becomes inaccessible. Inaccessible environments may have roles assigned to view billing. The `accessible` attribute on <Environment> is `false` when an environment is inaccessible and is not typically present if `accessible` is `true`. If the `href` is used to access an <Environment> on which `accessible` is `false`, an error is returned.

Request

```
GET http://{Terremark URI}/admin/users/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/users/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Users href="/admin/users/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.user; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
```

```
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/organizations/{organization identifier}/action/inviteUser"
      name="inviteUser"/>

    <Action href="/admin/organizations/{organization identifier}/action/createUser" name="createUser"
      type="application/vnd.tmrk.cloud.admin.createUser"/>

    <Action href="/admin/organizations/{organization identifier}/action/createApiUser"
      name="createApiUser" type="application/vnd.tmrk.cloud.admin.createApiUser"/>

  </Actions>

  <User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part}
    | {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user">

    <Links>

      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

      <Link href="/admin/users/securityQuestions"
        type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

      <Link href="/admin/users/{user identifier}/credentials"
        type="application/vnd.tmrk.cloud.credentials" rel="down"/>

      <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
        type=collection" rel="down"/> <!-- Only present on API users -->

    </Links>

    <Actions>

      <Action href="/admin/users/{user identifier}" name="edit"
        type="application/vnd.tmrk.cloud.admin.user"/>

      <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
        disabled}"/>

      <Action href="/admin/users/{user identifier}/accountStatus/action/enable"
        name="enableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
        | disabled}"/>

      <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
        name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user"
        actionDisabled="{noAccess | disabled}"/>

      <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
        type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

      <Action href="/admin/users/{user identifier}/accountStatus/action/unlock"
        name="unlockUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
        | disabled}"/>

      <Action href="/admin/users/{user identifier}/multifactor/action/disable"
        name="disableMultifactor" type="application/vnd.tmrk.cloud.admin.user"
        actionDisabled="{noAccess | disabled}"/>

      <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
```

```
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/5/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<MultifactorAuthentication>

  <CountryCode>{country code}</CountryCode>

  <PrimaryPhone>{primary telephone number}</PrimaryPhone>

  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>

  <BackupCountryCode>{country code}</BackupCountryCode>

  <BackupPhone>{backup telephone number}</BackupPhone>

  <BackupExtension>{backup telephone extension}</BackupExtension>

</MultifactorAuthentication>

<IsAdministrator>{true | false}</IsAdministrator>

<IsApiUser>{true | false}</IsApiUser>

<IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>

<IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>

<ApiKeys href="/admin/apiKeys/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>

  </Actions>
```

```
      <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
        type="application/vnd.tmrk.cloud.admin.apiKey">

        <Links>

          <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
            part} | {API user family name}, {API user given name}}"
            type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

          <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user
            email domain part} | {API user family name}, {API user given name}}"
            type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

        </Links>

        <Actions>

          <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

          <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

          <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

          <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

        </Actions>

        <AccessKey>{access key}</AccessKey>

        <Status>{Active | Inactive}</Status>

      </ApiKey>

        ⋮

    </ApiKeys>

  </User>

    ⋮

</Users>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 30389
  Content-Type: application/vnd.tmrk.cloud.admin.user; type=collection
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 27 Feb 2012 20:42:29 GMT

<Users href="/cloudapi/spec/admin/users/organizations/1" type="application/vnd.tmrk.cloud.admin.user;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/organizations/1/action/inviteuser" name="inviteUser"
```

```
    type="application/vnd.tmrk.cloud.admin.inviteUser"/>

  <Action href="/cloudapi/spec/admin/organizations/1/action/createuser" name="createUser"
    type="application/vnd.tmrk.cloud.admin.createUser"/>

  <Action href="/cloudapi/spec/admin/organizations/1/action/createapiuser" name="createApiUser"
    type="application/vnd.tmrk.cloud.admin.createApiUser"/>

</Actions>

<User href="/cloudapi/spec/admin/users/1" name="user1@gmail.com"
  type="application/vnd.tmrk.cloud.admin.user">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/cloudapi/spec/admin/users/securityquestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/users/1/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/users/1" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/cloudapi/spec/admin/users/1" name="remove"/>

    <Action href="/cloudapi/spec/admin/users/1/accountstatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/1/accountstatus/action/disable"
      name="disableUserAccount"/>

    <Action href="/cloudapi/spec/admin/users/1/accountstatus/action/reset" name="resetUserAccount"/>

    <Action href="/cloudapi/spec/admin/users/1/accountstatus/action/unlock" name="unlockUserAccount"
      actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/1/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/1/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/1/multifactor/action/disable"
      name="disableMultifactor"/>

    <Action href="/cloudapi/spec/admin/users/1/alertnotification/action/enable"
      name="enableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/1/alertnotification/action/disable"
      name="disableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/apikeys/users/1/action/createapikey" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName 1</FirstName>
```

```
    <LastName>LastName 1</LastName>
    <Email>user1@gmail.com</Email>
    <Status>Active</Status>
    <LoginStatus>Active</LoginStatus>
    <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>
    <MultifactorAuthentication>
      <CountryCode>1</CountryCode>
      <PrimaryPhone>8663546789</PrimaryPhone>
      <BackupCountryCode>201</BackupCountryCode>
      <BackupPhone>2345678901</BackupPhone>
    </MultifactorAuthentication>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
    <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
  </User>
  <User href="/cloudapi/spec/admin/users/2" name="user2@gmail.com"
    type="application/vnd.tmrk.cloud.admin.user">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
      <Link href="/cloudapi/spec/admin/users/securityquestions"
        type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
      <Link href="/cloudapi/spec/admin/users/2/credentials"
        type="application/vnd.tmrk.cloud.credentials" rel="down"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/users/2" name="edit"
        type="application/vnd.tmrk.cloud.admin.user"/>
      <Action href="/cloudapi/spec/admin/users/2" name="remove"/>
      <Action href="/cloudapi/spec/admin/users/2/accountstatus/action/enable" name="enableUserAccount"
        actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/2/accountstatus/action/disable"
        name="disableUserAccount"/>
      <Action href="/cloudapi/spec/admin/users/2/accountstatus/action/reset" name="resetUserAccount"/>
      <Action href="/cloudapi/spec/admin/users/2/accountstatus/action/unlock" name="unlockUserAccount"
        actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/2/credentials" name="edit"
        type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>
```

```
    <Action href="/cloudapi/spec/admin/users/2/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication"/>

    <Action href="/cloudapi/spec/admin/users/2/multifactor/action/disable" name="disableMultifactor"
      actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/2/alertnotification/action/enable"
      name="enableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/2/alertnotification/action/disable"
      name="disableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/apikeys/users/2/action/createapikey" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName 2</FirstName>

  <LastName>LastName 2</LastName>

  <Email>user2@gmail.com</Email>

  <Status>Active</Status>

  <LoginStatus>Active</LoginStatus>

  <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>

  <IsAdministrator>false</IsAdministrator>

  <IsApiUser>false</IsApiUser>

  <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>

  <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>

</User>

<User href="/cloudapi/spec/admin/users/3" name="user3@gmail.com"
  type="application/vnd.tmrk.cloud.admin.user">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/cloudapi/spec/admin/users/securityquestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/cloudapi/spec/admin/users/3/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/users/3" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/cloudapi/spec/admin/users/3" name="remove"/>

    <Action href="/cloudapi/spec/admin/users/3/accountstatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/3/accountstatus/action/disable"
      name="disableUserAccount"/>
```

```
      <Action href="/cloudapi/spec/admin/users/3/accountstatus/action/reset" name="resetUserAccount"/>

      <Action href="/cloudapi/spec/admin/users/3/accountstatus/action/unlock" name="unlockUserAccount"
        actionDisabled="disabled"/>

      <Action href="/cloudapi/spec/admin/users/3/credentials" name="edit"
        type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

      <Action href="/cloudapi/spec/admin/users/3/multifactor/action/enable" name="enableMultifactor"
        type="application/vnd.tmrk.cloud.admin.multifactorAuthentication"/>

      <Action href="/cloudapi/spec/admin/users/3/multifactor/action/disable" name="disableMultifactor"
        actionDisabled="disabled"/>

      <Action href="/cloudapi/spec/admin/users/3/alertnotification/action/enable"
        name="enableAlertNotifications" actionDisabled="disabled"/>

      <Action href="/cloudapi/spec/admin/users/3/alertnotification/action/disable"
        name="disableAlertNotifications" actionDisabled="disabled"/>

      <Action href="/cloudapi/spec/admin/apikeys/users/3/action/createapikey" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>

    </Actions>

    <FirstName>FirstName 3</FirstName>

    <LastName>LastName 3</LastName>

    <Email>user3@gmail.com</Email>

    <Status>Active</Status>

    <LoginStatus>Active</LoginStatus>

    <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>

    <IsAdministrator>true</IsAdministrator>

    <IsApiUser>false</IsApiUser>

    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>

    <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>

  </User>

  <User href="/cloudapi/spec/admin/users/4" name="user4@gmail.com"
    type="application/vnd.tmrk.cloud.admin.user">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

      <Link href="/cloudapi/spec/admin/users/securityquestions"
        type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

      <Link href="/cloudapi/spec/admin/users/4/credentials"
        type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    </Links>

    <Actions>

      <Action href="/cloudapi/spec/admin/users/4" name="edit"
        type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    <Action href="/cloudapi/spec/admin/users/4" name="remove"/>
    <Action href="/cloudapi/spec/admin/users/4/accountstatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/4/accountstatus/action/disable"
      name="disableUserAccount"/>
    <Action href="/cloudapi/spec/admin/users/4/accountstatus/action/reset" name="resetUserAccount"/>
    <Action href="/cloudapi/spec/admin/users/4/accountstatus/action/unlock" name="unlockUserAccount"
      actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/4/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/4/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication"/>
    <Action href="/cloudapi/spec/admin/users/4/multifactor/action/disable" name="disableMultifactor"
      actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/4/alertnotification/action/enable"
      name="enableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/4/alertnotification/action/disable"
      name="disableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/apikeys/users/4/action/createapikey" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>
  </Actions>
  <FirstName>FirstName 4</FirstName>
  <LastName>LastName 4</LastName>
  <Email>user4@gmail.com</Email>
  <Status>Active</Status>
  <LoginStatus>Active</LoginStatus>
  <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>
  <IsAdministrator>false</IsAdministrator>
  <IsApiUser>false</IsApiUser>
  <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>
</User>
<User href="/cloudapi/spec/admin/users/5" name="API User, FirstName 5"
  type="application/vnd.tmrk.cloud.admin.user">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/cloudapi/spec/admin/users/securityquestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
    <Link href="/cloudapi/spec/admin/users/5/credentials"
```

```
    type="application/vnd.tmrk.cloud.credentials" rel="down"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/users/5" name="edit"
     type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/cloudapi/spec/admin/users/5" name="remove"/>
    <Action href="/cloudapi/spec/admin/users/5/accountstatus/action/enable"
     name="enableUserAccount"/>
    <Action href="/cloudapi/spec/admin/users/5/accountstatus/action/disable"
     name="disableUserAccount" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/accountstatus/action/reset" name="resetUserAccount"
     actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/accountstatus/action/unlock" name="unlockUserAccount"
     actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/credentials" name="edit"
     type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/multifactor/action/enable" name="enableMultifactor"
     type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/multifactor/action/disable" name="disableMultifactor"
     actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/alertnotification/action/enable"
     name="enableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/5/alertnotification/action/disable"
     name="disableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/apikeys/users/5/action/createapikey" name="createApiKey"
     type="application/vnd.tmrk.cloud.admin.createApiKey"/>
  </Actions>
  <FirstName>FirstName 5</FirstName>
  <LastName>API User</LastName>
  <Email>API User</Email>
  <Status>Inactive</Status>
  <LoginStatus>Active</LoginStatus>
  <IsAdministrator>true</IsAdministrator>
  <IsApiUser>true</IsApiUser>
  <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/cloudapi/spec/admin/apikeys/users/5"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/cloudapi/spec/admin/users/5" name="User 5"
       type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
```

```
<Actions>
  <Action href="/cloudapi/spec/admin/apikeys/users/5/action/createapikey" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/>
</Actions>
<ApiKey href="/cloudapi/spec/admin/apikeys/1" name="API Key"
  type="application/vnd.tmrk.cloud.admin.apiKey">
  <Links>
    <Link href="/cloudapi/spec/admin/users/5" name="User 5"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    <Link href="/cloudapi/spec/admin/apikeys/users/5"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/apikeys/1" name="edit"/>
    <Action href="/cloudapi/spec/admin/apikeys/1/action/activate" name="activate"
      actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/apikeys/1/action/deactivate" name="deactivate"/>
    <Action href="/cloudapi/spec/admin/apikeys/1" name="remove"/>
  </Actions>
  <AccessKey>1111111111111111</AccessKey>
  <Status>Active</Status>
</ApiKey>
<ApiKey href="/cloudapi/spec/admin/apikeys/2" name="API Key"
  type="application/vnd.tmrk.cloud.admin.apiKey">
  <Links>
    <Link href="/cloudapi/spec/admin/users/5" name="User 5"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    <Link href="/cloudapi/spec/admin/apikeys/users/5"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/apikeys/2" name="edit"/>
    <Action href="/cloudapi/spec/admin/apikeys/2/action/activate" name="activate"/>
    <Action href="/cloudapi/spec/admin/apikeys/2/action/deactivate" name="deactivate"
      actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/apikeys/2" name="remove"/>
  </Actions>
  <AccessKey>2222222222222222</AccessKey>
  <Status>Inactive</Status>
</ApiKey>
```

```
    </ApiKeys>
  </User>
  <User href="/cloudapi/spec/admin/users/101" name="user101@gmail.com"
    type="application/vnd.tmrk.cloud.admin.user">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
      <Link href="/cloudapi/spec/admin/users/securityquestions"
        type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
      <Link href="/cloudapi/spec/admin/users/101/credentials"
        type="application/vnd.tmrk.cloud.credentials" rel="down"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/users/101" name="edit"
        type="application/vnd.tmrk.cloud.admin.user"/>
      <Action href="/cloudapi/spec/admin/users/101" name="remove" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/accountstatus/action/enable"
        name="enableUserAccount" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/accountstatus/action/disable"
        name="disableUserAccount" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/accountstatus/action/reset" name="resetUserAccount"
        actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/accountstatus/action/unlock"
        name="unlockUserAccount" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/credentials" name="edit"
        type="application/vnd.tmrk.cloud.credentials"/>
      <Action href="/cloudapi/spec/admin/users/101/multifactor/action/enable" name="enableMultifactor"
        type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/multifactor/action/disable"
        name="disableMultifactor" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/alertnotification/action/enable"
        name="enableAlertNotifications" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/101/alertnotification/action/disable"
        name="disableAlertNotifications"/>
      <Action href="/cloudapi/spec/admin/apikeys/users/101/action/createapikey" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>
    </Actions>
    <FirstName>FirstName 101</FirstName>
    <LastName>LastName 101</LastName>
    <Email>user101@gmail.com</Email>
    <Status>Active</Status>
```

```
    <LoginStatus>Active</LoginStatus>
    <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>
    <MultifactorAuthentication>
      <CountryCode>1</CountryCode>
      <PrimaryPhone>8663546789</PrimaryPhone>
      <BackupCountryCode>201</BackupCountryCode>
      <BackupPhone>2345678901</BackupPhone>
    </MultifactorAuthentication>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
    <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
  </User>
  <User href="/cloudapi/spec/admin/users/102" name="user102@gmail.com"
    type="application/vnd.tmrk.cloud.admin.user">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
      <Link href="/cloudapi/spec/admin/users/securityquestions"
        type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
      <Link href="/cloudapi/spec/admin/users/102/credentials"
        type="application/vnd.tmrk.cloud.credentials" rel="down"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/users/102" name="edit"
        type="application/vnd.tmrk.cloud.admin.user"/>
      <Action href="/cloudapi/spec/admin/users/102" name="remove"/>
      <Action href="/cloudapi/spec/admin/users/102/accountstatus/action/enable"
        name="enableUserAccount" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/102/accountstatus/action/disable"
        name="disableUserAccount"/>
      <Action href="/cloudapi/spec/admin/users/102/accountstatus/action/reset"
        name="resetUserAccount"/>
      <Action href="/cloudapi/spec/admin/users/102/accountstatus/action/unlock"
        name="unlockUserAccount" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/102/credentials" name="edit"
        type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/102/multifactor/action/enable" name="enableMultifactor"
        type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>
      <Action href="/cloudapi/spec/admin/users/102/multifactor/action/disable"
```

```
      name="disableMultifactor"/>
    <Action href="/cloudapi/spec/admin/users/102/alertnotification/action/enable"
      name="enableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/users/102/alertnotification/action/disable"
      name="disableAlertNotifications" actionDisabled="disabled"/>
    <Action href="/cloudapi/spec/admin/apikeys/users/102/action/createapikey" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>
  </Actions>
  <FirstName>FirstName 102</FirstName>
  <LastName>LastName 102</LastName>
  <Email>user102@gmail.com</Email>
  <Status>Active</Status>
  <LoginStatus>Active</LoginStatus>
  <LastLogin>2012-02-27T19:42:29.2739573Z</LastLogin>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>8663546789</PrimaryPhone>
    <BackupCountryCode>201</BackupCountryCode>
    <BackupPhone>2345678901</BackupPhone>
  </MultifactorAuthentication>
  <IsAdministrator>false</IsAdministrator>
  <IsApiUser>false</IsApiUser>
  <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
</User>
<User href="/cloudapi/spec/admin/users/201" name="API User, FirstName 201"
  type="application/vnd.tmrk.cloud.admin.user">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/cloudapi/spec/admin/users/securityquestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
    <Link href="/cloudapi/spec/admin/users/201/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/users/201" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    <Action href="/cloudapi/spec/admin/users/201" name="remove"/>

    <Action href="/cloudapi/spec/admin/users/201/accountstatus/action/enable"
     name="enableUserAccount" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/accountstatus/action/disable"
     name="disableUserAccount"/>

    <Action href="/cloudapi/spec/admin/users/201/accountstatus/action/reset" name="resetUserAccount"
     actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/accountstatus/action/unlock"
     name="unlockUserAccount" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/credentials" name="edit"
     type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/multifactor/action/enable" name="enableMultifactor"
     type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/multifactor/action/disable"
     name="disableMultifactor" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/alertnotification/action/enable"
     name="enableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/users/201/alertnotification/action/disable"
     name="disableAlertNotifications" actionDisabled="disabled"/>

    <Action href="/cloudapi/spec/admin/apikeys/users/201/action/createapikey" name="createApiKey"
     type="application/vnd.tmrk.cloud.admin.createApiKey"/>

  </Actions>

  <FirstName>FirstName 201</FirstName>

  <LastName>API User</LastName>

  <Email>API User</Email>

  <Status>Active</Status>

  <LoginStatus>Active</LoginStatus>

  <IsAdministrator>true</IsAdministrator>

  <IsApiUser>true</IsApiUser>

  <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>

  <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>

  <ApiKeys href="/cloudapi/spec/admin/apikeys/users/201"
   type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

    <Links>

      <Link href="/cloudapi/spec/admin/users/201" name="User 201"
       type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    </Links>

    <Actions>

      <Action href="/cloudapi/spec/admin/apikeys/users/201/action/createapikey" name="createApiKey"
       type="application/vnd.tmrk.cloud.admin.createApiKey"/>

    </Actions>

    <ApiKey href="/cloudapi/spec/admin/apikeys/1" name="API Key"
```

```
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/cloudapi/spec/admin/users/201" name="User 201"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/cloudapi/spec/admin/apikeys/users/201"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/cloudapi/spec/admin/apikeys/1" name="edit"/>
        <Action href="/cloudapi/spec/admin/apikeys/1/action/activate" name="activate"
          actionDisabled="disabled"/>
        <Action href="/cloudapi/spec/admin/apikeys/1/action/deactivate" name="deactivate"/>
        <Action href="/cloudapi/spec/admin/apikeys/1" name="remove"/>
      </Actions>
      <AccessKey>1111111111111111</AccessKey>
      <Status>Active</Status>
    </ApiKey>
    <ApiKey href="/cloudapi/spec/admin/apikeys/2" name="API Key"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/cloudapi/spec/admin/users/201" name="User 201"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/cloudapi/spec/admin/apikeys/users/201"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/cloudapi/spec/admin/apikeys/2" name="edit"/>
        <Action href="/cloudapi/spec/admin/apikeys/2/action/activate" name="activate"/>
        <Action href="/cloudapi/spec/admin/apikeys/2/action/deactivate" name="deactivate"
          actionDisabled="disabled"/>
        <Action href="/cloudapi/spec/admin/apikeys/2" name="remove"/>
      </Actions>
      <AccessKey>2222222222222222</AccessKey>
      <Status>Inactive</Status>
    </ApiKey>
  </ApiKeys>
</User>
<User href="/cloudapi/spec/admin/users/202" name="API User, FirstName 202"
  type="application/vnd.tmrk.cloud.admin.user">
  <Links>
```

```
  <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
   type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>

  <Link href="/cloudapi/spec/admin/users/securityquestions"
   type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

  <Link href="/cloudapi/spec/admin/users/202/credentials"
   type="application/vnd.tmrk.cloud.credentials" rel="down"/>

</Links>

<Actions>

  <Action href="/cloudapi/spec/admin/users/202" name="edit"
   type="application/vnd.tmrk.cloud.admin.user"/>

  <Action href="/cloudapi/spec/admin/users/202" name="remove"/>

  <Action href="/cloudapi/spec/admin/users/202/accountstatus/action/enable"
   name="enableUserAccount" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/accountstatus/action/disable"
   name="disableUserAccount"/>

  <Action href="/cloudapi/spec/admin/users/202/accountstatus/action/reset" name="resetUserAccount"
   actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/accountstatus/action/unlock"
   name="unlockUserAccount" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/credentials" name="edit"
   type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/multifactor/action/enable" name="enableMultifactor"
   type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/multifactor/action/disable"
   name="disableMultifactor" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/alertnotification/action/enable"
   name="enableAlertNotifications" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/users/202/alertnotification/action/disable"
   name="disableAlertNotifications" actionDisabled="disabled"/>

  <Action href="/cloudapi/spec/admin/apikeys/users/202/action/createapikey" name="createApiKey"
   type="application/vnd.tmrk.cloud.admin.createApiKey"/>

</Actions>

<FirstName>FirstName 202</FirstName>

<LastName>API User</LastName>

<Email>API User</Email>

<Status>Active</Status>

<LoginStatus>Active</LoginStatus>

<IsAdministrator>false</IsAdministrator>

<IsApiUser>true</IsApiUser>

<IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
```

```
    <IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>
    <ApiKeys href="/cloudapi/spec/admin/apikeys/users/202"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
      <Links>
        <Link href="/cloudapi/spec/admin/users/202" name="User 202"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
      </Links>
      <Actions>
        <Action href="/cloudapi/spec/admin/apikeys/users/202/action/createapikey" name="createApiKey"
          type="application/vnd.tmrk.cloud.admin.createApiKey"/>
      </Actions>
      <ApiKey href="/cloudapi/spec/admin/apikeys/1" name="API Key"
        type="application/vnd.tmrk.cloud.admin.apiKey">
        <Links>
          <Link href="/cloudapi/spec/admin/users/202" name="User 202"
            type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
          <Link href="/cloudapi/spec/admin/apikeys/users/202"
            type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
        </Links>
        <Actions>
          <Action href="/cloudapi/spec/admin/apikeys/1" name="edit"/>
          <Action href="/cloudapi/spec/admin/apikeys/1/action/activate" name="activate"
            actionDisabled="disabled"/>
          <Action href="/cloudapi/spec/admin/apikeys/1/action/deactivate" name="deactivate"/>
          <Action href="/cloudapi/spec/admin/apikeys/1" name="remove"/>
        </Actions>
        <AccessKey>1111111111111111</AccessKey>
        <Status>Active</Status>
      </ApiKey>
      <ApiKey href="/cloudapi/spec/admin/apikeys/2" name="API Key"
        type="application/vnd.tmrk.cloud.admin.apiKey">
        <Links>
          <Link href="/cloudapi/spec/admin/users/202" name="User 202"
            type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
          <Link href="/cloudapi/spec/admin/apikeys/users/202"
            type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
        </Links>
        <Actions>
          <Action href="/cloudapi/spec/admin/apikeys/2" name="edit"/>
          <Action href="/cloudapi/spec/admin/apikeys/2/action/activate" name="activate"/>
          <Action href="/cloudapi/spec/admin/apikeys/2/action/deactivate" name="deactivate"
```

```
          actionDisabled="disabled"/>
         <Action href="/cloudapi/spec/admin/apikeys/2" name="remove"/>
        </Actions>
        <AccessKey>2222222222222222</AccessKey>
        <Status>Inactive</Status>
      </ApiKey>
    </ApiKeys>
  </User>
</Users>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.2 Get Users by ID

The Get Users by ID call returns information regarding a specified user in an organization.

<Status> reflects whether the user or API key is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Every <Environment> for an organization is listed under <UserRole>, including environments which are inactive or STARred or otherwise inaccessible to normal use. However, billing information remains available for some time after an environment becomes inaccessible. Inaccessible environments may have roles assigned to view billing. The `accessible` attribute on <Environment> is `false` when an environment is inaccessible and is not typically present if `accessible` is `true`. If the `href` is used to access an <Environment> on which `accessible` is `false`, an error is returned.

Note: Absence of <OrganizationRole> or of a <Role> in an <EnvironmentRole> indicates no access permitted to the organization level or to that environment, respectively.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
GET http://{Terremark URI}/admin/users/{user identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/users/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
```

```
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>
```

```
      ⋮
  </EnvironmentRoles>
</UserRole>
<MultifactorAuthentication>
  <CountryCode>{country code}</CountryCode>
  <PrimaryPhone>{primary telephone number}</PrimaryPhone>
  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
  <BackupCountryCode>{country code}</BackupCountryCode>
  <BackupPhone>{backup telephone number}</BackupPhone>
  <BackupExtension>{backup telephone extension}</BackupExtension>
</MultifactorAuthentication>
<IsAdministrator>{true | false}</IsAdministrator>
<IsApiUser>{true | false}</IsApiUser>
<IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
<IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
<ApiKeys href="/admin/apiKeys/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>
  </Actions>
  <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
    type="application/vnd.tmrk.cloud.admin.apiKey">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
      <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
      <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
      <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
```

```
      <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
    </Actions>
    <AccessKey>{access key}</AccessKey>
    <Status>{Active | Inactive}</Status>
  </ApiKey>
    ⋮
</ApiKeys>
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3908
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 30 Aug 2011 20:28:40 GMT

<User href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/1/credentials" type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/1" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/1" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/1" name="remove"/>

    <Action href="/admin/users/1/accountStatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>

    <Action href="/admin/users/1/accountStatus/action/disable" name="disableUserAccount"/>

    <Action href="/admin/users/1/accountStatus/action/reset" name="resetUserAccount"/>

    <Action href="/admin/users/1/accountStatus/action/unlock" name="unlockUserAccount"
      actionDisabled="disabled"/>

    <Action href="/admin/users/1/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/1/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>
```

```
    <Action href="/admin/users/1/multifactor/action/disable" name="disableMultifactor"/>
    <Action href="/admin/users/1/alertNotification/action/enable" name="enableAlertNotifications"
      actionDisabled="disabled"/>
    <Action href="/admin/users/1/alertNotification/action/disable" name="disableAlertNotifications"
      actionDisabled="disabled"/>
    <Action href="/admin/apiKeys/users/1/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>
  </Actions>
  <FirstName>FirstName 1</FirstName>
  <LastName>LastName 1</LastName>
  <Email>user1@gmail.com</Email>
  <Status>Active</Status>
  <LoginStatus>Active</LoginStatus>
  <LastLogin>2011-11-01T14:48:24.9362486Z</LastLogin>
  <UserRole href="/admin/roles/users/1" type="application/vnd.tmrk.cloud.admin.userRole">
    <Links>
      <Link href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/roles/users/1" name="edit"
        type="application/vnd.tmrk.cloud.admin.userRole"/>
    </Actions>
    <OrganizationRole href="/admin/roles/1" name="Administrator"
      type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.environment"/>
      </EnvironmentRole>
      <EnvironmentRole>
        <Environment href="/environments/2" name="Environment 2"
          type="application/vnd.tmrk.cloud.environment"/>
      </EnvironmentRole>
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>8663546789</PrimaryPhone>
    <BackupCountryCode>201</BackupCountryCode>
```

```
    <BackupPhone>2345678901</BackupPhone>
  </MultifactorAuthentication>
  <IsAdministrator>true</IsAdministrator>
  <IsApiUser>false</IsApiUser>
  <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
</User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.3 Get Users Security Questions

The Get Users Security Questions call returns information regarding the security questions defined by the Enterprise Cloud that are available to the user in an organization. As part of the user credentials, the user must provide answers to six security questions: three defined by the Enterprise Cloud and three defined by the user.

Note: When used in **Action Users Edit Credentials**, the system-defined question must be entered in the body exactly as returned in the response of this call. If the question is altered or presented as a user-defined secret question, an error is returned.

Request

```
GET http://{Terremark URI}/admin/users/securityQuestions
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/users/securityQuestions
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.securityQuestion; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Questions href="/admin/users/securityQuestions"
  type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Question>What was your childhood nickname?</Question>
  <Question>In what city did you meet your spouse?</Question>
  <Question>What is the name of your childhood best friend?</Question>
  <Question>What street did you live on in third grade?</Question>
```

```
  <Question>What is your oldest sibling's middle name?</Question>
  <Question>What is your youngest sibling's middle name?</Question>
  <Question>What was the name of your first pet?</Question>
  <Question>In what city or town did your mother and father meet?</Question>
  <Question>What is the street number of the house you grew up in?</Question>
  <Question>What are the last 5 digits of your driver's license number?</Question>
  <Question>What was the name of your elementary / primary school?</Question>
  <Question>What is your maternal grandmother's maiden name?</Question>
  <Question>In what town was your first job?</Question>
</Questions>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1085
  Content-Type: application/vnd.tmrk.cloud.admin.securityQuestion; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 30 Aug 2011 17:49:49 GMT

<Questions href="/admin/users/securityQuestions"
  type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Question>What was your childhood nickname?</Question>
  <Question>In what city did you meet your spouse?</Question>
  <Question>What is the name of your childhood best friend?</Question>
  <Question>What street did you live on in third grade?</Question>
  <Question>What is your oldest sibling's middle name?</Question>
  <Question>What is your youngest sibling's middle name?</Question>
  <Question>What was the name of your first pet?</Question>
  <Question>In what city or town did your mother and father meet?</Question>
  <Question>What is the street number of the house you grew up in?</Question>
  <Question>What are the last 5 digits of your driver's license number?</Question>
  <Question>What was the name of your elementary / primary school?</Question>
  <Question>What is your maternal grandmother's maiden name?</Question>
  <Question>In what town was your first job?</Question>
</Questions>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.4 Get Users Credentials

The Get Users Credentials call returns information regarding the credentials for a specified user in an organization. As part of the user credentials, the user must provide answers to six security questions: three defined by the Enterprise Cloud and three defined by the user.

Note: When used, the question must be returned exactly as presented in the response of this call. If the question is altered or presented as a user-defined secret question, an error is returned.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
GET http://{Terremark URI}/admin/users/{user identifier}/credentials
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/users/1/credentials
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.credentials
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<UserCredentials href="/admin/users/{user identifier}/credentials"
  type="application/vnd.tmrk.cloud.credentials" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials"/>

  </Actions>

  <FirstName>{given name}</FirstName>
```

```
    <LastName>{family name}</LastName>
    <UserSecurityQuestions>
      <SecurityQuestion>
        <Question>{security question}</Question>
        <Answer>{answer}</Answer>
        <IsCustom>{true | false}</IsCustom>
      </SecurityQuestion>
        ⋮
    </UserSecurityQuestions>
  </UserCredentials>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 1438
    Content-Type: application/vnd.tmrk.cloud.credentials
    x-tmrk-currentuser: /admin/users/1
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 30 Aug 2011 19:27:25 GMT
  <UserCredentials href="/admin/users/1/credentials" type="application/vnd.tmrk.cloud.credentials"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/users/1" name="API User" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/users/1/credentials" name="edit"
        type="application/vnd.tmrk.cloud.credentials"/>
    </Actions>
    <FirstName>API</FirstName>
    <LastName>User</LastName>
    <UserSecurityQuestions>
      <SecurityQuestion>
        <Question>What was your childhood nickname?</Question>
        <Answer>Doogie Howser</Answer>
        <IsCustom>false</IsCustom>
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>What is the name of your childhood best friend?</Question>
        <Answer>Vinnie Delpino</Answer>
        <IsCustom>false</IsCustom>
```

```
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>In what town was your first job?</Question>
        <Answer>Los Angeles</Answer>
        <IsCustom>false</IsCustom>
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>Where did you first work?</Question>
        <Answer>Eastman Medical Center</Answer>
        <IsCustom>true</IsCustom>
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>What was your specialty?</Question>
        <Answer>ER</Answer>
        <IsCustom>true</IsCustom>
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>Which University did you graduate from?</Question>
        <Answer>Princeton University</Answer>
        <IsCustom>true</IsCustom>
      </SecurityQuestion>
    </UserSecurityQuestions>
  </UserCredentials>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.5 Action Users Invite

The Action Users Invite call invites a user to an organization. If successful, the call returns a 204 No Content header.

<InviteUser> has two variations. Only one of the two variations is permitted in a call. The difference lies only at the beginning of the body:

1. Invite from a company contact. Contacts may be retrieved with **Get Contacts** or **Get Contacts by ID**.

   The `name` attribute on <InviteUser … > is not used.

   <Contact> is required.

2. Invite a new user.

   The `name` attribute on <InviteUser … > is required and is the email address of the user.

   Note: The name may not be that of another user.

   <FirstName> and <LastName> are required.

Users must have at least one role, either an organization role or an environment role, to access the system. Users may have one organization role. Users need not have a role in every environment but may have only one role in any environment and may be different for each environment. Use **Get Roles** and **Get Roles by ID** to retrieve available roles.

<OrganizationRole> is optional but if present the `href` attribute is required to identify the organization role to which the user is assigned. The `href` used is that of a <Role> with a subordinate <RoleType>Organization</RoleType>.

<EnvironmentRoles> is optional but if present must have at least one <EnvironmentRole> subordinate element.

<EnvironmentRole> is optional but if present must have all subordinate elements present and valued.

The `href` attribute of <Environment … > is required to identify the environment in which the role is applied.

The `href` attribute of <Role … > is required to identify the environment role to which the user is assigned. The <Role> must have a subordinate <RoleType>Environment</RoleType>.

Note: Only one <Role> may be assigned to each environment and may be different for each environment.

Multifactor authentication is optional. If present, the country code and primary phone are required; other subordinate elements are optional.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Request

```
POST http://{Terremark URI}/admin/organizations/{organization identifier}/action/inviteUser
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/organizations/1/action/inviteUser
```

Body

1. Invite from a company contact:

```
<InviteUser>
  <Contact href="/admin/contacts/{contact identifier}" name="{contact email local part}@{contact
    email domain part}" type="application/vnd.tmrk.cloud.admin.contact"/> <!-- Required -->
  <UserRole>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
      type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
    <EnvironmentRoles> <!-- Optional but if used must have at least one <EnvironmentRole> -->
      <EnvironmentRole> <!-- Optional but if used all child elements must be present and valued -->
        <Environment href="/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.environment"/> <!-- href is required -->
        <Role href="/admin/roles/{role identifier}" name="{role name}"
          type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication> <!-- Optional but if used, required/optional applies to children-->
    <CountryCode>{country code}</CountryCode> <!-- Required -->
    <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
    <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
  </MultifactorAuthentication>
</InviteUser>
```

EXAMPLE

```
<InviteUser>
  <Contact href="/admin/contacts/2" name="user2@gmail.com"
    type="application/vnd.tmrk.cloud.admin.contact"/>
  <UserRole>
    <OrganizationRole href="/admin/roles/1" name="Role 1"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/1"/>
```

```
      <Role href="/admin/roles/3" name="Role 3"/>
     </EnvironmentRole>
    </EnvironmentRoles>
   </UserRole>
   <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>972-555-2121</PrimaryPhone>
    <BackupPhone>214-555-2323</BackupPhone>
   </MultifactorAuthentication>
  </InviteUser>
```

2. Invite a new user:

```
  <InviteUser name="{{user email local part}@{user email domain part} | {API user family name}, {API
   user given name}}"> <!-- name is required -->
   <FirstName>{user given name}</FirstName> <!-- Required -->
   <LastName>{user family name}</LastName> <!-- Required -->
   <UserRole>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
     type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
    <EnvironmentRoles> <!-- Optional but if used must have at least one <EnvironmentRole> -->
     <EnvironmentRole> <!-- Optional but if used all child elements must be present and valued -->
      <Environment href="/environments/{environment identifier}" name="{environment name}"
       type="application/vnd.tmrk.cloud.environment"/> <!-- href is required -->
      <Role href="/admin/roles/{role identifier}" name="{role name}"
       type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
     </EnvironmentRole>
      ⋮
    </EnvironmentRoles>
   </UserRole>
   <MultifactorAuthentication> <!-- Optional but if used, required/optional applies to children-->
    <CountryCode>{country code}</CountryCode> <!-- Required -->
    <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
    <BackupCountryCode>{country code}</BackupCountryCode> <!-- Optional -->
    <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
    <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
   </MultifactorAuthentication>
  </InviteUser>
```

EXAMPLE

```
<InviteUser name="Roger.Smith@gmail.com">
  <FirstName>Roger</FirstName>
  <LastName>Smith</LastName>
  <UserRole>
    <OrganizationRole href="/admin/roles/1" name="Role 1"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/1"/>
        <Role href="/admin/roles/3" name="Role 3"/>
      </EnvironmentRole>
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>972-555-2121</PrimaryPhone>
    <BackupPhone>214-555-2323</BackupPhone>
  </MultifactorAuthentication>
</InviteUser>
```

Response

```
HTTP/1.1 204 No Content
  Content-Length: 0
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  Content-Length: 0
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 06 Sep 2011 17:51:28 GMT
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.6 Action Users Create

The Action Users Create call creates a user in an organization. If successful, the call returns information regarding the user that was created.

Note: The call will return an error if the user has already been created.

<CreateUser … > has two variations. Only one of the two variations is permitted in a call. The difference lies only at the beginning of the body:

1. Create from a company contact. Contacts may be retrieved with **Get Contacts** or **Get Contacts by ID**.

   The `name` attribute on < CreateUser … > is not used.

   <Contact> is required.

2. Create a new user.

   The `name` attribute on < CreateUser … > is required and is the email address of the user.

   Note: The `name` may not be that of another user.

   <FirstName> and <LastName> are required.

<Password> is required and must meet password complexity rules, if enabled. Use **Get Administrative Organizations by ID** to retrieve password complexity rules, if required.

Users must have at least one role, either an organization role or an environment role, to access the system. Users may have one organization role. Users need not have a role in every environment but may have only one role in any environment and may be different for each environment. Use **Get Roles** and **Get Roles by ID** to retrieve available roles.

<OrganizationRole> is optional but if present the `href` attribute is required to identify the organization role to which the user is assigned. The `href` used is that of a <Role> with a subordinate <RoleType>Organization</RoleType>.

<EnvironmentRoles> is optional but if present must have at least one <EnvironmentRole> subordinate element.

<EnvironmentRole> is optional but if present must have all subordinate elements present and valued.

The `href` attribute of <Environment … > is required to identify the environment in which the role is applied.

The `href` attribute of <Role … > is required to identify the environment role to which the user is assigned. The <Role> must have a subordinate <RoleType>Environment</RoleType>.

Note: Only one <Role> may be assigned to each environment and may be different for each environment.

<UserSecurityQuestions> is required with exactly six <SecurityQuestion> subordinate elements. The first three security questions must be selected from the available system-defined security questions. Use **Get Users Security Questions** to retrieve available security questions. The last three must be user-defined security questions. No security questions may be repeated. No user-defined security question may be a system-defined security question.

<MultifactorAuthentication> is optional. If present, <CountryCode>, <PrimaryPhone>, and <Pin> are required; other subordinate elements are optional. If <BackupPhone> is present then <BackupCountryCode> is required. If <BackupExtension> is present then <BackupCountryCode> and <BackupPhone> are required. If present, multifactor authentication will be enabled on the user.

Note: If <MultifactorAuthentication> is used, a multifactor authentication license must be available. Use **Get Administrative Organizations by ID** to retrieve available multifactor authentication licenses.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Request

```
POST http://{Terremark URI}/admin/organizations/{organization identifier}/action/createUser
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/organizations/1/action/createUser
```

Body

1. Create from a company contact:

```
<CreateUser>
  <Contact href="/admin/contacts/{contact identifier}" name="{contact email local part}@{contact
    email domain part}" type="application/vnd.tmrk.cloud.admin.contact"/> <!-- Required -->
  <Password>{password}</Password> <!-- Required -->
  <UserRole>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
      type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRole>
      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment"/>
      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>
    </EnvironmentRole>
      ⋮
  </UserRole>
```

```
<UserSecurityQuestions> <!-- Required -->
  <SecurityQuestion>
    <Question>{system-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
    <Question>{system-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
    <Question>{system-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
    <Question>{user-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>true</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
    <Question>{user-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>true</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
    <Question>{user-defined security question}</Question>
    <Answer>{answer}</Answer>
    <IsCustom>true</IsCustom>
  </SecurityQuestion>
</UserSecurityQuestions>
<MultifactorAuthentication> <!-- Optional but if used, required/optional applies to children-->
  <CountryCode>{country code}</CountryCode> <!-- Required -->
  <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
  <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
  <BackupCountryCode>{backup country code}</BackupCountryCode> <!-- Optional -->
```

```
    <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
    <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
    <Pin>{country code}</Pin> <!-- Required -->
  </MultifactorAuthentication>
</CreateUser>
```

EXAMPLE

```
<CreateUser>
  <Contact href="/admin/contacts/2" name="user2@gmail.com"
    type="application/vnd.tmrk.cloud.admin.contact"/>
  <Password>abcd1234</Password>
  <UserRole>
    <OrganizationRole href="/admin/roles/2"/>
    <EnvironmentRoles/>
  </UserRole>
  <UserSecurityQuestions>
    <SecurityQuestion>
      <Question>What was your childhood nickname?</Question>
      <Answer>1</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>In what city did you meet your spouse?</Question>
      <Answer>2</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What is the name of your childhood best friend?</Question>
      <Answer>3</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>4</Question>
      <Answer>4</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>5</Question>
```

```
      <Answer>5</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>6</Question>
      <Answer>6</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
  </UserSecurityQuestions>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>9725551221</PrimaryPhone>
    <Pin>1234</Pin>
  </MultifactorAuthentication>
</CreateUser>
```

2. Create a new user:

```
<CreateUser name="{{user email local part}@{user email domain part} | {API user family name}, {API
  user given name}}">
  <FirstName>{given name}</FirstName> <!-- Required -->
  <LastName>{family name}</LastName> <!-- Required -->
  <Password>{password}</Password> <!-- Required -->
  <UserRole>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
      type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRole>
      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment"/>
      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>
    </EnvironmentRole>
      ⋮
  </UserRole>
  <UserSecurityQuestions> <!-- Required -->
    <SecurityQuestion>
      <Question>{system-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
```

```
    <SecurityQuestion>
      <Question>{system-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>{system-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>{user-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>{user-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>{user-defined security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
  </UserSecurityQuestions>
  <MultifactorAuthentication> <!-- Optional but if used, required/optional applies to children-->
    <CountryCode>{country code}</CountryCode> <!-- Required -->
    <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
    <BackupCountryCode>{backup country code}</BackupCountryCode> <!-- Optional -->
    <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
    <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
    <Pin>{country code}</Pin> <!-- Required -->
  </MultifactorAuthentication>
</CreateUser>
```

EXAMPLE

```
<CreateUser name="John.Doe+103@gmail.com">
  <FirstName>John</FirstName>
  <LastName>Doe</LastName>
  <Password>abcd1234</Password>
  <UserRole>
    <OrganizationRole href="/admin/roles/27"/>
    <EnvironmentRoles/>
  </UserRole>
  <UserSecurityQuestions>
    <SecurityQuestion>
      <Question>What was your childhood nickname?</Question>
      <Answer>1</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>In what city did you meet your spouse?</Question>
      <Answer>2</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What is the name of your childhood best friend?</Question>
      <Answer>3</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>4</Question>
      <Answer>4</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>5</Question>
      <Answer>5</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>6</Question>
      <Answer>6</Answer>
```

```
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
  </UserSecurityQuestions>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>9725551221</PrimaryPhone>
    <Pin>1234</Pin>
  </MultifactorAuthentication>
</CreateUser>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  Location: /admin/users/{user identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
```

```
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/credentials" name="editCredentials"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>
```

```
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>{country code}</CountryCode>
    <PrimaryPhone>{primary telephone number}</PrimaryPhone>
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
```

```
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
</User>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 3022
  Content-Type: application/xml; charset=utf-8
  Location: /admin/users/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 23 Sep 2011 20:17:41 GMT
<User href="/admin/users/1" name="John.Doe+103@gmail.com"
  type="application/vnd.tmrk.cloud.admin.user" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
    <Link href="/admin/users/1/credentials" name="user1@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>
  </Links>
  <Actions>
    <Action href="/admin/users/1" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/1" name="remove"/>
    <Action href="/admin/users/1/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
    <Action href="/admin/users/1/accountStatus/action/disable" name="disableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/1/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/1/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
    <Action href="/admin/users/1/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/1/multifactor/action/enable" name="enableMultifactor"
```

```
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
    <Action href="/admin/users/1/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>
    <Action href="/admin/users/1/alertNotification/action/enable" name="enableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
    <Action href="/admin/users/1/alertNotification/action/disable" name="disableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
  </Actions>
  <FirstName>John</FirstName>
  <LastName>Doe</LastName>
  <Email>John.Doe+103@gmail.com</Email>
  <Status>Active</Status>
  <LoginStatus>Active</LoginStatus>
  <UserRole>
    <OrganizationRole href="/admin/roles/2"/>
    <EnvironmentRoles/>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>9725551221</PrimaryPhone>
    <BackupCountryCode>0</BackupCountryCode>
  </MultifactorAuthentication>
  <IsAdministrator>true</IsAdministrator>
  <IsApiUser>false</IsApiUser>
  <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
</User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.7 Action Users Create API User

The Action Users Create API User call creates an API user in an organization. If successful, the call returns information regarding the user that was created.

Note: The call will return an error if the user has already been created.

<FirstName> is required and need not be unique.

Note: <LastName> is not available for API users as the family name is designated as "API User" for all API users.

Users must have at least one role, either an organization role or an environment role, to access the system. Users may have one organization role. Users need not have a role in every environment but may have only one role in any environment and may be different for each environment. Use **Get Roles** and **Get Roles by ID** to retrieve available roles.

<OrganizationRole> is optional but if present the `href` attribute is required to identify the organization role to which the user is assigned. The `href` used is that of a <Role> with a subordinate <RoleType>Organization</RoleType>.

<EnvironmentRoles> is optional but if present must have at least one <EnvironmentRole> subordinate element.

<EnvironmentRole> is optional but if present must have all subordinate elements present and valued.

The `href` attribute of <Environment … > is required to identify the environment in which the role is applied.

The `href` attribute of <Role … > is required to identify the environment role to which the user is assigned. The <Role> must have a subordinate <RoleType>Environment</RoleType>.

Note: Only one <Role> may be assigned to each environment and may be different for each environment.

<Status> reflects whether the user or API key is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Request

```
POST http://{Terremark URI}/admin/organizations/{organization identifier}/action/createApiUser
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/organizations/1/action/createApiUser
```

Body

```
<CreateApiUser>
  <FirstName>{API user name}</FirstName>
  <UserRole>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
     type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRole>
```

```
      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </UserRole>

</CreateApiUser>
```

EXAMPLE

```
<CreateApiUser>

  <FirstName>Joe Apiuser</FirstName>

  <UserRole>

    <OrganizationRole href="/admin/roles/2"/>

    <EnvironmentRole/>

  </UserRole>

</CreateApiUser>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  Location: /admin/users/{user identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
      name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
      name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/apiKeys/users/5/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

  </Actions>

  <FirstName>{user given name}</FirstName>

  <LastName>{user family name}</LastName>

  <Email>{user email local part}@{user email domain part}</Email>

  <Status>{Active | Inactive}</Status>

  <LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

  <LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

  <UserRole href="/admin/roles/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.userRole">

    <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/roles/users/{user identifier}" name="edit"
        type="application/vnd.tmrk.cloud.admin.userRole"/>

    </Actions>

    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
```

```
      type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>
        <Role href="/admin/roles/{role identifier}" name="{role name}"
          type="application/vnd.tmrk.cloud.admin.role"/>
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>{country code}</CountryCode>
    <PrimaryPhone>{primary telephone number}</PrimaryPhone>
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
```

```
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
</User>
```

EXAMPLE

```
<User href="/admin/users/5" name="API User,Joe Apiuser" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
    <Link href="/admin/users/5/credentials" type="application/vnd.tmrk.cloud.credentials" rel="down"/>
    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/>
  </Links>
  <Actions>
    <Action href="/admin/users/5" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/5" name="remove"/>
    <Action href="/admin/users/5/accountStatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>
    <Action href="/admin/users/5/accountStatus/action/disable" name="disableUserAccount"/>
    <Action href="/admin/users/5/accountStatus/action/reset" name="resetUserAccount"
      actionDisabled="disabled"/>
    <Action href="/admin/users/5/accountStatus/action/unlock" name="unlockUserAccount"
      actionDisabled="disabled"/>
    <Action href="/admin/users/5/credentials" name="edit"
```

```
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

  <Action href="/admin/users/5/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>

  <Action href="/admin/users/5/multifactor/action/disable" name="disableMultifactor"
    actionDisabled="disabled"/>

  <Action href="/admin/users/5/alertNotification/action/enable" name="enableAlertNotifications"
    actionDisabled="disabled"/>

  <Action href="/admin/users/5/alertNotification/action/disable" name="disableAlertNotifications"
    actionDisabled="disabled"/>

  <Action href="/admin/apiKeys/users/5/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/>

</Actions>

<FirstName>Joe Apiuser</FirstName>

<LastName>API User</LastName>

<Email>API User</Email>

<Status>Active</Status>

<LoginStatus>Active</LoginStatus>

<UserRole>

  <Links>

    <Link href="/admin/users/5" name="LastName 5, FirstName 5"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/5" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/2"/>

</UserRole>

<IsAdministrator>true</IsAdministrator>

<IsApiUser>true</IsApiUser>

<IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>

<IsMultifactorAuthenticationEnabled>false</IsMultifactorAuthenticationEnabled>

<ApiKeys href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
  type=collection">

  <Links>

    <Link href="/admin/users/5" name="API User,Joe Apiuser"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/users/5/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>
```

```
    </Actions>
    <ApiKey href="/admin/apiKeys/1" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/5" name="API User,Joe Apiuser"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
          type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/1" name="edit"/>
        <Action href="/admin/apiKeys/1/action/activate" name="activate" actionDisabled="disabled"/>
        <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/1" name="remove"/>
      </Actions>
      <AccessKey>99999999999999999999999999999999999999999999999999</AccessKey>
      <Status>Active</Status>
    </ApiKey>
  </ApiKeys>
</User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.8 Action Users Edit

The Action Users Edit call edits the first name (given name), last name (family name), assigned roles, and multifactor authentication parameters of a user in an organization. If successful, the call returns information regarding the user that was modified.

The `name` attribute on <User … > is required, is the email address of the user for a regular user and is the family name and given name separated by a comma plus space for an API user, and may not be changed.

Note: <FirstName> may be changed. When <IsApiUser>true</IsApiUser>, the `name` attribute on <User … > will also change.

Note: <LastName> may not be changed when <IsApiUser>true</IsApiUser>.

<Status> is optional and ignored if present. This element may be changed only using **Action Users Enable Account** and **Action Users Disable Account**.

<LoginStatus> is optional and ignored if present. This element may be changed only to AccountReset using **Action Users Reset Account**.

This call modifies the roles assigned to a user in the same manner as **Action Roles Edit User.**

Users must have at least one role, either an organization role or an environment role, to access the system. Users may have one organization role. Users need not have a role in every environment but may have only one role in any environment and may be different for each environment. Use **Get Roles** and **Get Roles by ID** to retrieve available roles.

Note: Absence of <OrganizationRole> or of a <Role> in an <EnvironmentRole> indicates no access permitted to the organization level or to that environment, respectively.

<OrganizationRole> is optional. Including an <OrganizationRole … > not currently on the user adds that organization role to the user. The `href` attribute is required to identify the organization role to which the user is assigned. The `href` used must be that of a <Role> with a subordinate <RoleType>Organization</RoleType>.

Note: If a user has an organization role and the <OrganizationRole … > is not present in the body, the organization role is removed from the user.

Both <EnvironmentRoles> and <EnvironmentRole> are optional. Including a <Role … > with an <Environment … > (under an <EnvironmentRole>) not currently on the user adds that environment role in that environment to the user. If an <EnvironmentRole> (with an <Environment … >and a <Role … >) is not present in the body but present on the user, that environment role is unchanged. If an <EnvironmentRole> has an <Environment … > but the <Role … > is absent and the environment role is present on the user, that environment role is removed in that environment from the user. To summarize:

Source	Body	Outcome

`<EnvironmentRoles>`
`</EnvironmentRoles>`
or
`<EnvironmentRoles>`
`  <EnvironmentRole>`
`  <Environment href="/environments/1" …/>`
`  </EnvironmentRole>`
`</EnvironmentRoles>`
	`<EnvironmentRoles>`
	`  <EnvironmentRole>`
	`  <Environment href="/environments/1" …/>`
	`  <Role href="/admin/roles/2" …/>`
	`  </EnvironmentRole>`
	`</EnvironmentRoles>`
		`<EnvironmentRoles>`
		`  <EnvironmentRole>`
		`  <Environment href="/environments/1" …/>`
		`  <Role href="/admin/roles/2" …/>`
		`  </EnvironmentRole>`
		`</EnvironmentRoles>`

`<EnvironmentRoles>`
`  <EnvironmentRole>`
`  <Environment href="/environments/1" …/>`
`  <Role href="/admin/roles/2" …/>`
`  </EnvironmentRole>`
`</EnvironmentRoles>`
	`<EnvironmentRoles>`
	`</EnvironmentRoles>`
		`<EnvironmentRoles>`
		`  <EnvironmentRole>`
		`  <Environment href="/environments/1" …/>`
		`  <Role href="/admin/roles/2" …/>`
		`  </EnvironmentRole>`
		`</EnvironmentRoles>`

Source	Body	Outcome
<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> </EnvironmentRole> </EnvironmentRoles>

This call can modify the multifactor authentication parameters, if multifactor authentication is enabled and <MultifactorAuthentication> is present, in the same manner as **Action Users Enable Multifactor**.

<MultifactorAuthentication> is optional. If present and multifactor authentication is enabled for the user, the country code and primary phone are required; other subordinate elements are optional. If <BackupPhone> is present then <BackupCountryCode> is required. If <BackupExtension> is present then <BackupCountryCode> and <BackupPhone> are required. If present and multifactor authentication is disabled for the user, multifactor authentication information is ignored.

Note: If the user has multifactor authentication enabled and any optional subordinate elements are present in the call and not valued on the user account, that element is added to the user account. Similarly, if the user has multifactor authentication enabled and any optional subordinate elements are absent in the call and valued on the user account, that element is removed from the user account.

<Status> reflects whether the user or API key is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut
User identifier mod 2> 0	Administrator

Condition	Outcome
User identifier mod 3 = 0	Alerts enabled
User identifier mod 5 = 0	API User
User identifier> 100	Multifactor seats unavailable
User identifier mod 3	Multifactor disabled

Request

```
PUT http://{Terremark URI}/admin/users/{user identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/users/1
```

Body

```
<User name="{{user email local part}@{user email domain part} | {API user family name}, {API user
 given name}}">
  <FirstName>{user given name}</FirstName> <!-- Optional -->
  <LastName>{user family name}</LastName> <!-- Optional -->
  <Status>Active</Status> <!-- Optional, ignored if present -->
  <LoginStatus>LockedOut</LoginStatus> <!-- Optional, ignored if present -->
  <UserRole> <!-- Required -->
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
     type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
    <EnvironmentRoles> <!-- Optional but if used must have at least one <EnvironmentRole> -->
      <EnvironmentRole> <!-- Optional but if used all child elements must be present and valued -->
        <Environment href="/environments/{environment identifier}" name="{environment name}"
         type="application/vnd.tmrk.cloud.environment"/> <!-- href is required -->
        <Role href="/admin/roles/{role identifier}" name="{role name}"
         type="application/vnd.tmrk.cloud.admin.role"/> <!-- href is required -->
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication> <!-- Optional but if used, required/optional applies to children-->
    <CountryCode>{country code}</CountryCode> <!-- Required -->
    <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
    <BackupCountryCode>{country code}</BackupCountryCode> <!-- Optional -->
    <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
    <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
```

```
    </MultifactorAuthentication>
  </User>
```

EXAMPLE

```
  <User name="user104@gmail.com">
    <FirstName>Roger</FirstName>
    <LastName>Smith</LastName>
    <Email>user104@gmail.com</Email>
    <Status>Active</Status>
    <UserRole>
      <OrganizationRole href="/admin/roles/1" name="Role 1"/>
      <EnvironmentRoles>
        <EnvironmentRole>
          <Environment href="/environments/1"/>
          <Role href="/admin/roles/3" name="Role 3"/>
        </EnvironmentRole>
      </EnvironmentRoles>
    </UserRole>
    <MultifactorAuthentication>
      <CountryCode>1</CountryCode>
      <PrimaryPhone>9725552121</PrimaryPhone>
      <BackupPhone>2145552323</BackupPhone>
    </MultifactorAuthentication>
  </User>
```

Response

```
  HTTP/1.1 200 OK
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.admin.user
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}

  <User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
    {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

      <Link href="/admin/users/securityQuestions"
```

```
    type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

  <Link href="/admin/users/{user identifier}/credentials"
    type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
    type=collection" rel="down"/> <!-- Only present on API users -->

</Links>

<Actions>

  <Action href="/admin/users/{user identifier}" name="edit"
    type="application/vnd.tmrk.cloud.admin.user"/>

  <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
    disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
    name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
    | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">
```

```
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/roles/users/{user identifier}" name="edit"
        type="application/vnd.tmrk.cloud.admin.userRole"/>
    </Actions>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
      type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/{environment identifier}" name="{environment name}"
          type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>
        <Role href="/admin/roles/{role identifier}" name="{role name}"
          type="application/vnd.tmrk.cloud.admin.role"/>
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>{country code}</CountryCode>
    <PrimaryPhone>{primary telephone number}</PrimaryPhone>
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
    <BackupCountryCode>{country code}</BackupCountryCode> <!-- Optional -->
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
```

```
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3631
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 01 Nov 2011 17:22:34 GMT
<User href="/admin/users/1" name="user102@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
```

```
    <Link href="/admin/users/1/credentials" type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/1" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/1" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/1" name="remove"/>

    <Action href="/admin/users/1/accountStatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>

    <Action href="/admin/users/1/accountStatus/action/disable" name="disableUserAccount"/>

    <Action href="/admin/users/1/accountStatus/action/reset" name="resetUserAccount"/>

    <Action href="/admin/users/1/accountStatus/action/unlock" name="unlockUserAccount"
      actionDisabled="disabled"/>

    <Action href="/admin/users/1/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/1/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication" actionDisabled="disabled"/>

    <Action href="/admin/users/1/multifactor/action/disable" name="disableMultifactor"/>

    <Action href="/admin/users/1/alertNotification/action/enable" name="enableAlertNotifications"
      actionDisabled="disabled"/>

    <Action href="/admin/users/1/alertNotification/action/disable" name="disableAlertNotifications"
      actionDisabled="disabled"/>

    <Action href="/admin/apiKeys/users/1/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>

  </Actions>

  <FirstName>Roger</FirstName>

  <LastName>Smith</LastName>

  <Email>user1@gmail.com</Email>

  <Status>Active</Status>

  <LoginStatus>Active</LoginStatus>

  <LastLogin>2011-11-01T16:22:34.5514326Z</LastLogin>

  <UserRole>

    <Links>

      <Link href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>

    </Links>

    <OrganizationRole href="/admin/roles/1" name="Role 1"/>

    <EnvironmentRoles>

      <EnvironmentRole>

        <Environment href="/environments/1"/>
```

```
        <Role href="/admin/roles/3" name="Role 3"/>
      </EnvironmentRole>
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>1</CountryCode>
    <PrimaryPhone>9725552121</PrimaryPhone>
    <BackupCountryCode>1</BackupCountryCode>
    <BackupPhone>2145552323</BackupPhone>
  </MultifactorAuthentication>
  <IsAdministrator>true</IsAdministrator>
  <IsApiUser>false</IsApiUser>
  <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
</User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.9 Action Users Edit Credentials

The Action Users Edit Credentials call edits the first (given) name, last (family) name, password, and security questions of the credentials for a specified user in an organization. If successful, the call returns information regarding the user that was modified.

Note: Only the user may change their credentials; the authorization on this call must match the user edited.

<FirstName> and <LastName> are required.

<Password> is optional.

<UserSecurityQuestions> is required and must have all subordinate elements present and valued. Three questions must be from the predefined list and three must be created by the user. No security question may be repeated and no answer may be repeated. Questions may not exceed one hundred characters and answers may not exceed twenty-five characters. Use **Get Users Security Questions** to retrieve the predefined secret questions available to the user. The security questions with <IsCustom>false</IsCustom> must exactly match the predefined question as presented in the response to **Get Users Security Questions**; if the question is altered an error is returned. The security questions with <IsCustom>true</IsCustom> must not use any question presented in the response to **Get Users Security Questions**; if used an error is returned.

Request

```
PUT http://{Terremark URI}/admin/users/{user identifier}/credentials
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/users/1/credentials
```

Body

```
<UserCredentials href="/admin/users/{user identifier}/credentials"
 type="application/vnd.tmrk.cloud.credentials">
 <FirstName>{given name}</FirstName> <!-- Required -->
 <LastName>{family name}</LastName> <!-- Required -->
 <Password>{password}</Password> <!-- Optional -->
 <UserSecurityQuestions> <!-- Required -->
  <SecurityQuestion>
   <Question>{predefined security question 1}</Question>
   <Answer>{answer}</Answer>
   <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
   <Question>{predefined security question 2}</Question>
   <Answer>{answer}</Answer>
   <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
   <Question>{predefined security question 3}</Question>
   <Answer>{answer}</Answer>
   <IsCustom>false</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
   <Question>{custom security question 1}</Question>
   <Answer>{answer}</Answer>
   <IsCustom>true</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
   <Question>{custom security question 2}</Question>
   <Answer>{answer}</Answer>
   <IsCustom>true</IsCustom>
  </SecurityQuestion>
  <SecurityQuestion>
   <Question>{custom security question 3}</Question>
```

```
      <Answer>{answer}</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
  </UserSecurityQuestions>
</UserCredentials>
```

EXAMPLE

```
<UserCredentials href="/admin/users/1/credentials" type="application/vnd.tmrk.cloud.credentials">
  <FirstName>Fred</FirstName>
  <LastName>User</LastName>
  <UserSecurityQuestions>
    <SecurityQuestion>
      <Question>What was your childhood nickname?</Question>
      <Answer>Doogie</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What is the name of your childhood best friend?</Question>
      <Answer>Vinnie Cooper</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>In what town was your first job?</Question>
      <Answer>Los Angeles</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>Where did you first work?</Question>
      <Answer>Eastman Medical Center</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What was your specialty?</Question>
      <Answer>ER</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
```

```
      <Question>Which University did you graduate from?</Question>
      <Answer>Princeton University</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
  </UserSecurityQuestions>
</UserCredentials>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.credentials
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<UserCredentials href="/admin/users/{user identifier}/credentials"
  type="application/vnd.tmrk.cloud.credentials" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials"/>
  </Actions>
  <FirstName>{given name}</FirstName>
  <LastName>{family name}</LastName>
  <UserSecurityQuestions>
    <SecurityQuestion>
      <Question>{security question}</Question>
      <Answer>{answer}</Answer>
      <IsCustom>{true | false}</IsCustom>
    </SecurityQuestion>
      ⋮
  </UserSecurityQuestions>
</UserCredentials>
```

EXAMPLE;

```
HTTP/1.1 200 OK
  Content-Length: 1431
  Content-Type: application/vnd.tmrk.cloud.credentials
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
  Date: Tue, 30 Aug 2011 22:44:51 GMT
<UserCredentials href="/admin/users/1/credentials" type="application/vnd.tmrk.cloud.credentials"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/1" name="API User" type="application/vnd.tmrk.cloud.admin.user"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/users/1/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials"/>
  </Actions>
  <FirstName>Fred</FirstName>
  <LastName>User</LastName>
  <UserSecurityQuestions>
    <SecurityQuestion>
      <Question>What was your childhood nickname?</Question>
      <Answer>Doogie</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What is the name of your childhood best friend?</Question>
      <Answer>Vinnie Cooper</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>In what town was your first job?</Question>
      <Answer>Los Angeles</Answer>
      <IsCustom>false</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>Where did you first work?</Question>
      <Answer>Eastman Medical Center</Answer>
      <IsCustom>true</IsCustom>
    </SecurityQuestion>
    <SecurityQuestion>
      <Question>What was your specialty?</Question>
      <Answer>ER</Answer>
      <IsCustom>true</IsCustom>
```

```
      </SecurityQuestion>
      <SecurityQuestion>
        <Question>Which University did you graduate from?</Question>
        <Answer>Princeton University</Answer>
        <IsCustom>true</IsCustom>
      </SecurityQuestion>
    </UserSecurityQuestions>
  </UserCredentials>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.10 Action Users Enable Alerts

The Action Users Enable Alerts call enables email notification of events for a user in an organization. If successful, the call returns information regarding the user for whom alerts were enabled.

Note: Only the user may change their email notification; the authorization on this call must match the user edited.

Note: To enable alerts the user must have <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/alertNotification/action/enable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/102/alertNotification/action/enable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
```

```
{API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

<Links>

  <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  <Link href="/organizations/{organization identifier}" name="{organization name}"
    type="application/vnd.tmrk.cloud.organization" rel="up"/>

  <Link href="/admin/users/securityQuestions"
    type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

  <Link href="/admin/users/{user identifier}/credentials"
    type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
    type=collection" rel="down"/> <!-- Only present on API users -->

</Links>

<Actions>

  <Action href="/admin/users/{user identifier}" name="edit"
    type="application/vnd.tmrk.cloud.admin.user"/>

  <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
    disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
    name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
    | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>
```

```
<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
 type="application/vnd.tmrk.cloud.admin.userRole">

 <Links>

  <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
   part} | {API user family name}, {API user given name}}"
   type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

 </Links>

 <Actions>

  <Action href="/admin/roles/users/{user identifier}" name="edit"
   type="application/vnd.tmrk.cloud.admin.userRole"/>

 </Actions>

 <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
  type="application/vnd.tmrk.cloud.admin.role"/>

 <EnvironmentRoles>

  <EnvironmentRole>

   <Environment href="/environments/{environment identifier}" name="{environment name}"
    type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

   <Role href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  </EnvironmentRole>

   ⋮

 </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

 <CountryCode>{country code}</CountryCode>

 <PrimaryPhone>{primary telephone number}</PrimaryPhone>

 <PrimaryExtension>{primary telephone extension}</PrimaryExtension>

 <BackupCountryCode>{country code}</BackupCountryCode>

 <BackupPhone>{backup telephone number}</BackupPhone>

 <BackupExtension>{backup telephone extension}</BackupExtension>

</MultifactorAuthentication>

<IsAdministrator>{true | false}</IsAdministrator>

<IsApiUser>{true | false}</IsApiUser>

<IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>

<IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>

<ApiKeys href="/admin/apiKeys/users/{user identifier}"
```

```
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

      <Links>

        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

      </Links>

      <Actions>

        <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
          type="application/vnd.tmrk.cloud.admin.createApiKey"/>

      </Actions>

      <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
        type="application/vnd.tmrk.cloud.admin.apiKey">

        <Links>

          <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
            part} | {API user family name}, {API user given name}}"
            type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

          <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
            domain part} | {API user family name}, {API user given name}}"
            type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

        </Links>

        <Actions>

          <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

          <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

          <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

          <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

        </Actions>

        <AccessKey>{access key}</AccessKey>

        <Status>{Active | Inactive}</Status>

      </ApiKey>

        ⋮

    </ApiKeys>

  </User>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 3942
    Content-Type: application/vnd.tmrk.cloud.admin.user
    x-tmrk-currentuser: /admin/users/102
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 31 Aug 2011 22:53:45 GMT

  <User href="/admin/users/102" name="user102@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
<Links>
  <Link href="/admin/organizations/100" name="Organization 100"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  <Link href="/organizations/100" name="Organization 100"
    type="application/vnd.tmrk.cloud.organization" rel="up"/>
  <Link href="/admin/users/securityQuestions" name="Predefined Questions"
    type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
  <Link href="/admin/users/102/credentials" name="user102@gmail.com"
    type="application/vnd.tmrk.cloud.credentials" rel="down"/>
</Links>
<Actions>
  <Action href="/admin/users/102" name="edit" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="noAccess"/>
  <Action href="/admin/users/102" name="remove" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/accountStatus/action/enable" name="enableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/accountStatus/action/disable" name="disableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="noAccess"/>
  <Action href="/admin/users/102/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials"/>
  <Action href="/admin/users/102/alertNotification/action/enable" name="enableAlertNotifications"
    type="application/vnd.tmrk.cloud.admin.user"/>
  <Action href="/admin/users/102/alertNotification/action/disable" name="disableAlertNotifications"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>
</Actions>
<FirstName>FirstName102</FirstName>
<LastName>LastName102</LastName>
<Email>user102@gmail.com</Email>
<Status>Active</Status>
<LoginStatus>Active</LoginStatus>
<LastLogin>2011-08-31T21:53:45.2235213Z</LastLogin>
<UserRole href="/admin/roles/users/102" type="application/vnd.tmrk.cloud.admin.userRole">
  <Actions>
    <Action href="/admin/roles/users/102" name="edit"
```

```
        type="application/vnd.tmrk.cloud.admin.userRole" actionDisabled="noAccess"/>
      </Actions>
      <EnvironmentRoles>
        <EnvironmentRole>
          <Environment href="/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.environment"/>
          <Role href="/admin/roles/2" name="Predefined Role"
            type="application/vnd.tmrk.cloud.admin.role"/>
        </EnvironmentRole>
        <EnvironmentRole>
          <Environment href="/environments/2" name="Environment 2"
            type="application/vnd.tmrk.cloud.environment"/>
          <Role href="/admin/roles/6" name="Custom Role" type="application/vnd.tmrk.cloud.admin.role"/>
        </EnvironmentRole>
      </EnvironmentRoles>
    </UserRole>
    <MultifactorAuthentication>
      <CountryCode>0</CountryCode>
      <PrimaryPhone>+1 866 354 6789</PrimaryPhone>
      <BackupPhone>+1 234 567 8901</BackupPhone>
    </MultifactorAuthentication>
    <IsAdministrator>false</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.11 Action Users Enable Multifactor

The Action Users Enable Multifactor call enables multifactor authentication for a user in an organization. If successful, the call returns information regarding the user with multifactor authentication that was enabled.

Note: To enable multifactor authentication the user must have multifactor authentication disabled.

Note: Enabling multifactor authentication for a user will consume one multifactor authentication license in the organization.

<CountryCode> and <PrimaryPhone> are required

Other subordinate elements are optional. If <BackupPhone> is present then <BackupCountryCode> is required. If <BackupExtension> is present then <BackupCountryCode> and <BackupPhone> are required.

Note: To enable, a multifactor authentication license must be available. Use **Get Administrative Organizations by ID** to retrieve available multifactor authentication licenses.

Note: If any optional subordinate elements are present in the call and not valued on the user account, that element is added to the user account. Similarly, if any optional subordinate elements are absent in the call and valued on the user account, that element is removed from the user account.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut
User identifier> 100	Multifactor seats unavailable
User identifier mod 3	Multifactor disabled

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/multifactor/action/enable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/3/multifactor/action/enable
```

Body

```
<MultifactorAuthentication>
  <CountryCode>{country code}</CountryCode> <!-- Required -->
  <PrimaryPhone>{primary telephone number}</PrimaryPhone> <!-- Required -->
  <PrimaryExtension>{primary telephone extension}</PrimaryExtension> <!-- Optional -->
  <BackupCountryCode>{country code}</BackupCountryCode> <!-- Optional -->
```

```
  <BackupPhone>{backup telephone number}</BackupPhone> <!-- Optional -->
  <BackupExtension>{backup telephone extension}</BackupExtension> <!-- Optional -->
</MultifactorAuthentication>
```

EXAMPLE

```
<MultifactorAuthentication>
  <CountryCode>1</CountryCode>
  <PrimaryPhone>9725552121</PrimaryPhone>
  <BackupCountryCode>1</BackupCountryCode>
  <BackupPhone>2145552323</BackupPhone>
</MultifactorAuthentication>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>
    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>
    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->
  </Links>
  <Actions>
    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>
    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>
    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>
```

```
    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
     type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
     type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
     type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
     type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
     type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
     name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
     actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
     name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
     actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
     type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

  </Actions>

  <FirstName>{user given name}</FirstName>

  <LastName>{user family name}</LastName>

  <Email>{user email local part}@{user email domain part}</Email>

  <Status>{Active | Inactive}</Status>

  <LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

  <LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

  <UserRole href="/admin/roles/users/{user identifier}"
   type="application/vnd.tmrk.cloud.admin.userRole">

    <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
       part} | {API user family name}, {API user given name}}"
       type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/roles/users/{user identifier}" name="edit"
       type="application/vnd.tmrk.cloud.admin.userRole"/>

    </Actions>

    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
     type="application/vnd.tmrk.cloud.admin.role"/>

    <EnvironmentRoles>

      <EnvironmentRole>

        <Environment href="/environments/{environment identifier}" name="{environment name}"
         type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

        <Role href="/admin/roles/{role identifier}" name="{role name}"
```

```
      type="application/vnd.tmrk.cloud.admin.role"/>
    </EnvironmentRole>
     ⋮
  </EnvironmentRoles>
</UserRole>
<MultifactorAuthentication>
  <CountryCode>{country code}</CountryCode>
  <PrimaryPhone>{primary telephone number}</PrimaryPhone>
  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
  <BackupCountryCode>{country code}</BackupCountryCode>
  <BackupPhone>{backup telephone number}</BackupPhone>
  <BackupExtension>{backup telephone extension}</BackupExtension>
</MultifactorAuthentication>
<IsAdministrator>{true | false}</IsAdministrator>
<IsApiUser>{true | false}</IsApiUser>
<IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
<IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
<ApiKeys href="/admin/apiKeys/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>
  </Actions>
  <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
    type="application/vnd.tmrk.cloud.admin.apiKey">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
      <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
```

```
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3627
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 07 Dec 2011 22:23:53 GMT

<User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/300" name="Organization 300"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/300" name="Organization 300"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/3/credentials" type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/3" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3" name="remove"/>

    <Action href="/admin/users/3/accountStatus/action/enable" name="enableUserAccount"
      actionDisabled="disabled"/>

    <Action href="/admin/users/3/accountStatus/action/disable" name="disableUserAccount"/>

    <Action href="/admin/users/3/accountStatus/action/reset" name="resetUserAccount"/>

    <Action href="/admin/users/3/accountStatus/action/unlock" name="unlockUserAccount"/>

    <Action href="/admin/users/3/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/3/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.multifactorAuthentication"/>

    <Action href="/admin/users/3/multifactor/action/disable" name="disableMultifactor"
      actionDisabled="disabled"/>
```

```
    <Action href="/admin/users/3/alertNotification/action/enable" name="enableAlertNotifications"
      actionDisabled="disabled"/>

    <Action href="/admin/users/3/alertNotification/action/disable" name="disableAlertNotifications"
      actionDisabled="disabled"/>

    <Action href="/admin/apiKeys/users/3/action/createApiKey" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName 3</FirstName>

  <LastName>LastName 3</LastName>

  <Email>user3@gmail.com</Email>

  <Status>Active</Status>

  <LoginStatus>LockedOut</LoginStatus>

  <LastLogin>2011-12-07T21:23:53.5209946Z</LastLogin>

  <UserRole href="/admin/roles/users/3" type="application/vnd.tmrk.cloud.admin.userRole">

    <Links>

      <Link href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/roles/users/3" name="edit"
        type="application/vnd.tmrk.cloud.admin.userRole"/>

    </Actions>

    <OrganizationRole href="/admin/roles/1" name="Administrator"
      type="application/vnd.tmrk.cloud.admin.role"/>

    <EnvironmentRoles>

      <EnvironmentRole>

        <Environment href="/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.environment"/>

      </EnvironmentRole>

      <EnvironmentRole>

        <Environment href="/environments/2" name="Environment 2"
          type="application/vnd.tmrk.cloud.environment"/>

      </EnvironmentRole>

    </EnvironmentRoles>

  </UserRole>

  <MultifactorAuthentication>

    <CountryCode>1</CountryCode>

    <PrimaryPhone>9725552121</PrimaryPhone>

    <BackupCountryCode>1</BackupCountryCode>

    <BackupPhone>2145552323</BackupPhone>
```

```
    </MultifactorAuthentication>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
    <IsMultifactorAuthenticationEnabled>true</IsMultifactorAuthenticationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.12 Action Users Enable Account

The Action Users Enable Account call enables a user in an organization. If successful, the call returns information regarding the user that was enabled.

Note: To enable requires <Status> to have a value of `Inactive`.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

Note: This call sets <Status> to `Active`.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/accountStatus/action/enable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/2/accountStatus/action/enable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
```

```
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

  <CountryCode>{country code}</CountryCode>

  <PrimaryPhone>{primary telephone number}</PrimaryPhone>

  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
```

```
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
```

```
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3627
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 06 Sep 2011 19:27:13 GMT

<User href="/admin/users/2" name="user2@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/2/credentials" name="user2@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/2" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/2" name="remove"/>

    <Action href="/admin/users/2/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/2/accountStatus/action/disable" name="disableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/2/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/2/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/2/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/2/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/2/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/2/alertNotification/action/enable" name="enableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/2/alertNotification/action/disable" name="disableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName2</FirstName>
```

```
    <LastName>LastName2</LastName>
    <Email>user2@gmail.com</Email>
    <Status>Active</Status>
    <LoginStatus>Active</LoginStatus>
    <LastLogin>2011-09-06T18:27:13.9059988Z</LastLogin>
    <UserRole href="/admin/roles/users/2" type="application/vnd.tmrk.cloud.admin.userRole">
      <Actions>
        <Action href="/admin/roles/users/2" name="edit"
          type="application/vnd.tmrk.cloud.admin.userRole"/>
      </Actions>
      <EnvironmentRoles>
        <EnvironmentRole>
          <Environment href="/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.environment"/>
          <Role href="/admin/roles/2" name="Predefined Role"
            type="application/vnd.tmrk.cloud.admin.role"/>
        </EnvironmentRole>
        <EnvironmentRole>
          <Environment href="/environments/2" name="Environment 2"
            type="application/vnd.tmrk.cloud.environment"/>
          <Role href="/admin/roles/6" name="Custom Role" type="application/vnd.tmrk.cloud.admin.role"/>
        </EnvironmentRole>
      </EnvironmentRoles>
    </UserRole>
    <IsAdministrator>false</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.13 Action Users Disable Alerts

The Action Users Disable Alerts call disables email notification of events for a user in an organization. If successful, the call returns information regarding the user for whom alerts were disabled.

Note: Only the user may change their email notification; the authorization on this call must match the user edited.

Note: To disable alerts the user must have <IsAlertNotificationEnabled>true</IsAlertNotificationEnabled>.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/alertNotification/action/disable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/105/alertNotification/action/disable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
```

```
    | disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->
</Actions>
<FirstName>{user given name}</FirstName>
<LastName>{user family name}</LastName>
<Email>{user email local part}@{user email domain part}</Email>
<Status>{Active | Inactive}</Status>
<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>
<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>
<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>
  </Actions>
  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>
  <EnvironmentRoles>
    <EnvironmentRole>
      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>
```

```
      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

  <CountryCode>{country code}</CountryCode>

  <PrimaryPhone>{primary telephone number}</PrimaryPhone>

  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>

  <BackupCountryCode>{country code}</BackupCountryCode>

  <BackupPhone>{backup telephone number}</BackupPhone>

  <BackupExtension>{backup telephone extension}</BackupExtension>

</MultifactorAuthentication>

<IsAdministrator>{true | false}</IsAdministrator>

<IsApiUser>{true | false}</IsApiUser>

<IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>

<IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>

<ApiKeys href="/admin/apiKeys/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>

  </Actions>

  <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
    type="application/vnd.tmrk.cloud.admin.apiKey">

    <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

      <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
```

```
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3795
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 01 Sep 2011 14:40:32 GMT

<User href="/admin/users/101" name="user101@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/101/credentials" name="user101@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/101" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/101" name="remove" actionDisabled="disabled"/>

    <Action href="/admin/users/101/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/accountStatus/action/disable" name="disableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user"/>
```

```
    <Action href="/admin/users/101/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials"/>

    <Action href="/admin/users/101/alertNotification/action/enable" name="enableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/101/alertNotification/action/disable" name="disableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user"/>

  </Actions>

  <FirstName>FirstName101</FirstName>

  <LastName>LastName101</LastName>

  <Email>user101@gmail.com</Email>

  <Status>Inactive</Status>

  <LoginStatus>Active</LoginStatus>

  <LastLogin>2011-09-01T13:40:32.2304741Z</LastLogin>

  <UserRole href="/admin/roles/users/101" type="application/vnd.tmrk.cloud.admin.userRole">

    <Actions>

      <Action href="/admin/roles/users/101" name="edit"
        type="application/vnd.tmrk.cloud.admin.userRole" actionDisabled="disabled"/>

    </Actions>

    <OrganizationRole href="/admin/roles/1" name="Administrator"
      type="application/vnd.tmrk.cloud.admin.role"/>

    <EnvironmentRoles>

      <EnvironmentRole>

        <Environment href="/environments/1" name="Environment 1"
          type="application/vnd.tmrk.cloud.environment"/>

      </EnvironmentRole>

      <EnvironmentRole>

        <Environment href="/environments/2" name="Environment 2"
          type="application/vnd.tmrk.cloud.environment"/>

      </EnvironmentRole>

    </EnvironmentRoles>

  </UserRole>

  <MultifactorAuthentication>

    <CountryCode>0</CountryCode>

    <PrimaryPhone>+1 866 354 6789</PrimaryPhone>

    <BackupCountryCode>{country code}</BackupCountryCode>

    <BackupPhone>+1 234 567 8901</BackupPhone>

  </MultifactorAuthentication>

  <IsAdministrator>true</IsAdministrator>
```

```
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.14 Action Users Disable Multifactor

The Action Users Disable Multifactor call disables multifactor authentication for a user in an organization. If successful, the call returns information regarding the user with multifactor authentication that was disabled.

Note: To disable multifactor authentication the user must have multifactor authentication enabled.

Note: Disabling multifactor authentication for a user will return one multifactor authentication license to the organization.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut
User identifier> 100	Multifactor seats unavailable
User identifier mod 3	Multifactor disabled

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/multifactor/action/disable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/1/multifactor/action/disable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
```

```
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

  <CountryCode>{country code}</CountryCode>

  <PrimaryPhone>{primary telephone number}</PrimaryPhone>

  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
```

```
    <BackupCountryCode>{country code}</BackupCountryCode>

    <BackupPhone>{backup telephone number}</BackupPhone>

    <BackupExtension>{backup telephone extension}</BackupExtension>

  </MultifactorAuthentication>

  <IsAdministrator>{true | false}</IsAdministrator>

  <IsApiUser>{true | false}</IsApiUser>

  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>

  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>

  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

    <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>

    </Actions>

    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">

      <Links>

        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

      </Links>

      <Actions>

        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

      </Actions>

      <AccessKey>{access key}</AccessKey>

      <Status>{Active | Inactive}</Status>

    </ApiKey>

      ⋮

  </ApiKeys>
```

```
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 781
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 20:13:35 GMT

<User href="/admin/users/1" name="user4654@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/users/1" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/1" name="remove"/>

    <Action href="/admin/users/1/accountStatus/action/disable" name="disableUserAccount"/>

    <Action href="/admin/users/1/accountStatus/action/reset" name="resetUserAccount"/>

    <Action href="/admin/users/1/multifactor/action/disable" name="disableMultifactor"/>

  </Actions>

  <FirstName>FirstName1</FirstName>

  <LastName>LastName1</LastName>

  <Status>Active</Status>

  <LoginStatus>Active</LoginStatus>

  <UserRole>

    <Role>Other</Role>

    <EnvironmentRoles>

      <EnvironmentRole>

        <Environment href="/environments/3"/>

        <AccessLevel>User</AccessLevel>

        <BillingAccess>true</BillingAccess>

      </EnvironmentRole>

      <EnvironmentRole>

        <Environment href="/environments/4"/>

        <AccessLevel>ReadOnly</AccessLevel>

        <BillingAccess>false</BillingAccess>

      </EnvironmentRole>

      <EnvironmentRole>
```

```
        <Environment href="/environments/5"/>
        <AccessLevel>NoAccess</AccessLevel>
        <BillingAccess>false</BillingAccess>
      </EnvironmentRole>
    </EnvironmentRoles>
  </UserRole>
</User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.15 Action Users Disable Account

The Action Users Disable Account call disables a user in an organization. If successful, the call returns information regarding the user that was disabled.

Note: To disable requires <Status> to have a value of `Active`.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

Note: This call sets <Status> to `Inactive`.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/accountStatus/action/disable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/3/accountStatus/action/disable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
```

```
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>

  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

</Actions>

<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

  <CountryCode>{country code}</CountryCode>

  <PrimaryPhone>{primary telephone number}</PrimaryPhone>

  <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
```

```
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
    type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
        type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
      </Actions>
      <AccessKey>{access key}</AccessKey>
      <Status>{Active | Inactive}</Status>
    </ApiKey>
      ⋮
  </ApiKeys>
```

```
</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3558
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 06 Sep 2011 19:32:47 GMT

<User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/3/credentials" name="user3@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/3" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3" name="remove"/>

    <Action href="/admin/users/3/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3/accountStatus/action/disable" name="disableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/3/alertNotification/action/enable" name="enableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/alertNotification/action/disable" name="disableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName3</FirstName>
```

```
    <LastName>LastName3</LastName>
    <Email>user3@gmail.com</Email>
    <Status>Inactive</Status>
    <LoginStatus>Active</LoginStatus>
    <LastLogin>2011-09-06T18:32:47.3697111Z</LastLogin>
    <UserRole href="/admin/roles/users/3" type="application/vnd.tmrk.cloud.admin.userRole">
      <Actions>
        <Action href="/admin/roles/users/3" name="edit"
          type="application/vnd.tmrk.cloud.admin.userRole"/>
      </Actions>
      <OrganizationRole href="/admin/roles/1" name="Administrator"
        type="application/vnd.tmrk.cloud.admin.role"/>
      <EnvironmentRoles>
        <EnvironmentRole>
          <Environment href="/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.environment"/>
        </EnvironmentRole>
        <EnvironmentRole>
          <Environment href="/environments/2" name="Environment 2"
            type="application/vnd.tmrk.cloud.environment"/>
        </EnvironmentRole>
      </EnvironmentRoles>
    </UserRole>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.16 Action Users Unlock Account

The Action Users Unlock Account call unlocks a user in an organization after too many failed login attempts. If successful, the call returns information regarding the user that was unlocked.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Note: This call sets <LoginStatus> to Active.

Live Specification Test Values

Condition	Outcome
User identifier = 1	UserStatus = Active, UserLoginStatus = Active
User identifier = 2	UserStatus = Inactive, UserLoginStatus = Active
User identifier = 3	UserStatus = Active, UserLoginStatus = LockedOut

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/accountStatus/action/unlock
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/3/accountStatus/action/unlock
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>
```

```
<Actions>
  <Action href="/admin/users/{user identifier}" name="edit"
    type="application/vnd.tmrk.cloud.admin.user"/>
  <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
    disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
    name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
    | disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
    name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
    name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
    actionDisabled="{noAccess | disabled}"/>
  <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
    type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->
</Actions>
<FirstName>{user given name}</FirstName>
<LastName>{user family name}</LastName>
<Email>{user email local part}@{user email domain part}</Email>
<Status>{Active | Inactive}</Status>
<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>
<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>
<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/roles/users/{user identifier}" name="edit"
```

```
      type="application/vnd.tmrk.cloud.admin.userRole"/>
    </Actions>
    <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
     type="application/vnd.tmrk.cloud.admin.role"/>
    <EnvironmentRoles>
      <EnvironmentRole>
        <Environment href="/environments/{environment identifier}" name="{environment name}"
         type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>
        <Role href="/admin/roles/{role identifier}" name="{role name}"
         type="application/vnd.tmrk.cloud.admin.role"/>
      </EnvironmentRole>
        ⋮
    </EnvironmentRoles>
  </UserRole>
  <MultifactorAuthentication>
    <CountryCode>{country code}</CountryCode>
    <PrimaryPhone>{primary telephone number}</PrimaryPhone>
    <PrimaryExtension>{primary telephone extension}</PrimaryExtension>
    <BackupCountryCode>{country code}</BackupCountryCode>
    <BackupPhone>{backup telephone number}</BackupPhone>
    <BackupExtension>{backup telephone extension}</BackupExtension>
  </MultifactorAuthentication>
  <IsAdministrator>{true | false}</IsAdministrator>
  <IsApiUser>{true | false}</IsApiUser>
  <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>
  <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>
  <ApiKeys href="/admin/apiKeys/users/{user identifier}"
   type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">
    <Links>
      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
       part} | {API user family name}, {API user given name}}"
       type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
       type="application/vnd.tmrk.cloud.admin.createApiKey"/>
    </Actions>
    <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
     type="application/vnd.tmrk.cloud.admin.apiKey">
      <Links>
```

```
        <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
          part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

        <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
          domain part} | {API user family name}, {API user given name}}"
          type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

      </Links>

      <Actions>

        <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

        <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

        <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

        <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

      </Actions>

      <AccessKey>{access key}</AccessKey>

      <Status>{Active | Inactive}</Status>

    </ApiKey>

      ⋮

  </ApiKeys>

</User>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3558
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 06 Sep 2011 19:32:47 GMT

<User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/3/credentials" name="user3@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/3" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3" name="remove"/>

    <Action href="/admin/users/3/accountStatus/action/enable" name="enableUserAccount"
```

```
    type="application/vnd.tmrk.cloud.admin.user"/>

  <Action href="/admin/users/3/accountStatus/action/disable" name="disableUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  <Action href="/admin/users/3/accountStatus/action/reset" name="resetUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  <Action href="/admin/users/3/accountStatus/action/unlock" name="unlockUserAccount"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  <Action href="/admin/users/3/multifactor/action/disable" name="disableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  <Action href="/admin/users/3/multifactor/action/enable" name="enableMultifactor"
    type="application/vnd.tmrk.cloud.admin.user"/>

  <Action href="/admin/users/3/credentials" name="edit"
    type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

  <Action href="/admin/users/3/alertNotification/action/enable" name="enableAlertNotifications"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  <Action href="/admin/users/3/alertNotification/action/disable" name="disableAlertNotifications"
    type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

</Actions>

<FirstName>FirstName3</FirstName>

<LastName>LastName3</LastName>

<Email>user3@gmail.com</Email>

<Status>Inactive</Status>

<LoginStatus>Active</LoginStatus>

<LastLogin>2011-09-06T18:32:47.3697111Z</LastLogin>

<UserRole href="/admin/roles/users/3" type="application/vnd.tmrk.cloud.admin.userRole">

  <Actions>

    <Action href="/admin/roles/users/3" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/1" name="Administrator"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>

    </EnvironmentRole>

    <EnvironmentRole>

      <Environment href="/environments/2" name="Environment 2"
        type="application/vnd.tmrk.cloud.environment"/>

    </EnvironmentRole>

  </EnvironmentRoles>
```

```
    </UserRole>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.17 Action Users Reset Account

The Action Users Reset Account call resets a user in an organization. If successful, the call returns information regarding the user that was reset.

Note: Resetting a user sets the user account back to the initial state and sends a new invitation email. The user must then perform the registration process to establish their account again. A user may be reset only with <Status>Active</Status>.

<Status> reflects whether the user is active. Permitted values are:

- **Active** – user is active and permitted access.
- **Inactive** – user is inactive and no longer permitted access.

<LoginStatus> reflects the current status of the user's access. Permitted values are:

- **Active** – user is able to log in.
- **LockedOut** – user has exceeded the permitted attempts to log in.
- **AccountReset** – user's account has been reset and user has not yet performed the registration steps.

Note: This call sets <LoginStatus> to AccountReset.

Request

```
POST http://{Terremark URI}/admin/users/{user identifier}/accountStatus/action/reset
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/users/3/accountStatus/action/reset
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.user
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain part} |
  {API user family name}, {API user given name}}" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/{user identifier}/credentials"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

    <Link href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="down"/> <!-- Only present on API users -->

  </Links>

  <Actions>

    <Action href="/admin/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/{user identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/disable"
      name="disableUserAccount" type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess
      | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/enable"
      name="enableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/users/{user identifier}/alertNotification/action/disable"
      name="disableAlertNotifications" type="application/vnd.tmrk.cloud.admin.user"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/> <!-- Only present on API users -->

  </Actions>
```

```
<FirstName>{user given name}</FirstName>

<LastName>{user family name}</LastName>

<Email>{user email local part}@{user email domain part}</Email>

<Status>{Active | Inactive}</Status>

<LoginStatus>{Active | LockedOut | AccountReset}</LoginStatus>

<LastLogin>2011-08-30T19:09:32.7868268Z</LastLogin>

<UserRole href="/admin/roles/users/{user identifier}"
 type="application/vnd.tmrk.cloud.admin.userRole">

 <Links>

  <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
   part} | {API user family name}, {API user given name}}"
   type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

 </Links>

 <Actions>

  <Action href="/admin/roles/users/{user identifier}" name="edit"
   type="application/vnd.tmrk.cloud.admin.userRole"/>

 </Actions>

 <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
  type="application/vnd.tmrk.cloud.admin.role"/>

 <EnvironmentRoles>

  <EnvironmentRole>

   <Environment href="/environments/{environment identifier}" name="{environment name}"
    type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

   <Role href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  </EnvironmentRole>

   ⋮

 </EnvironmentRoles>

</UserRole>

<MultifactorAuthentication>

 <CountryCode>{country code}</CountryCode>

 <PrimaryPhone>{primary telephone number}</PrimaryPhone>

 <PrimaryExtension>{primary telephone extension}</PrimaryExtension>

 <BackupCountryCode>{country code}</BackupCountryCode>

 <BackupPhone>{backup telephone number}</BackupPhone>

 <BackupExtension>{backup telephone extension}</BackupExtension>

</MultifactorAuthentication>

<IsAdministrator>{true | false}</IsAdministrator>

<IsApiUser>{true | false}</IsApiUser>
```

```
    <IsAlertNotificationEnabled>{true | false}</IsAlertNotificationEnabled>

    <IsMultifactorAuthenticationEnabled>{true | false}</IsMultifactorAuthenticationEnabled>

    <ApiKeys href="/admin/apiKeys/users/{user identifier}"
     type="application/vnd.tmrk.cloud.admin.apiKey; type=collection">

     <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
       part} | {API user family name}, {API user given name}}"
       type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

     </Links>

     <Actions>

      <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
       type="application/vnd.tmrk.cloud.admin.createApiKey"/>

     </Actions>

     <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
      type="application/vnd.tmrk.cloud.admin.apiKey">

      <Links>

       <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

       <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

      </Links>

      <Actions>

       <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

       <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

       <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

       <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

      </Actions>

      <AccessKey>{access key}</AccessKey>

      <Status>{Active | Inactive}</Status>

     </ApiKey>

      ⋮

    </ApiKeys>

   </User>
```

EXAMPLE

```
   HTTP/1.1 200 OK
    Content-Length: 3562
    Content-Type: application/vnd.tmrk.cloud.admin.user
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
  Date: Tue, 06 Sep 2011 19:39:10 GMT

<User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/100" name="Organization 100"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/users/securityQuestions" name="Predefined Questions"
      type="application/vnd.tmrk.cloud.admin.securityQuestion; type=collection" rel="down"/>

    <Link href="/admin/users/3/credentials" name="user3@gmail.com"
      type="application/vnd.tmrk.cloud.credentials" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/users/3" name="edit" type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3" name="remove"/>

    <Action href="/admin/users/3/accountStatus/action/enable" name="enableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/accountStatus/action/disable" name="disableUserAccount"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3/accountStatus/action/reset" name="resetUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/accountStatus/action/unlock" name="unlockUserAccount"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/multifactor/action/disable" name="disableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/multifactor/action/enable" name="enableMultifactor"
      type="application/vnd.tmrk.cloud.admin.user"/>

    <Action href="/admin/users/3/credentials" name="edit"
      type="application/vnd.tmrk.cloud.credentials" actionDisabled="disabled"/>

    <Action href="/admin/users/3/alertNotification/action/enable" name="enableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

    <Action href="/admin/users/3/alertNotification/action/disable" name="disableAlertNotifications"
      type="application/vnd.tmrk.cloud.admin.user" actionDisabled="disabled"/>

  </Actions>

  <FirstName>FirstName3</FirstName>

  <LastName>LastName3</LastName>

  <Email>user3@gmail.com</Email>

  <Status>Active</Status>

  <LoginStatus>AccountReset</LoginStatus>

  <LastLogin>2011-09-06T18:39:10.3467328Z</LastLogin>

  <UserRole href="/admin/roles/users/3" type="application/vnd.tmrk.cloud.admin.userRole">
```

```
      <Actions>
        <Action href="/admin/roles/users/3" name="edit"
          type="application/vnd.tmrk.cloud.admin.userRole"/>
      </Actions>
      <OrganizationRole href="/admin/roles/1" name="Administrator"
        type="application/vnd.tmrk.cloud.admin.role"/>
      <EnvironmentRoles>
        <EnvironmentRole>
          <Environment href="/environments/1" name="Environment 1"
            type="application/vnd.tmrk.cloud.environment"/>
        </EnvironmentRole>
        <EnvironmentRole>
          <Environment href="/environments/2" name="Environment 2"
            type="application/vnd.tmrk.cloud.environment"/>
        </EnvironmentRole>
      </EnvironmentRoles>
    </UserRole>
    <IsAdministrator>true</IsAdministrator>
    <IsApiUser>false</IsApiUser>
    <IsAlertNotificationEnabled>false</IsAlertNotificationEnabled>
  </User>
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.32.18 Action Users Remove

The Action Users Remove call removes a user from an organization. If successful, the call returns a 204 No Content header.

Request

```
DELETE http://{Terremark URI}/admin/users/{user identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/users/3
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 16:36:31 GMT
```

Return to *7.32 User*.

Return to *7 Application Programming Interface Reference Guide*.

7.33 Contact

7.33.1 Get Contacts 1026

7.33.2 Get Contacts by ID 1028

Advance to *7.34 API Key*.

This section contains the calls for the Contact entity.

Return to *7 Application Programming Interface Reference Guide*.

7.33.1 Get Contacts

The Get Contacts call returns information regarding the contacts for an organization.

Request

```
GET http://{Terremark URI}/admin/contacts/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/contacts/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.contact; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Contacts href="/admin/contacts/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.contact; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
```

```
      <Link href="/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/organizations/{organization identifier}/action/inviteUser" name="inviteUser"
        type="application/vnd.tmrk.cloud.admin.inviteUser"/>

    </Actions>

    <Contact href="/admin/contacts/{contact identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.contact">

      <Links>

        <Link href="/admin/organizations/{organization identifier}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

        <Link href="/organizations/{organization identifier}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>

      </Links>

      <Actions>

        <Action href="/admin/organizations/{organization identifier}/action/inviteUser"
          name="inviteUser" type="application/vnd.tmrk.cloud.admin.inviteUser"/>

      </Actions>

      <FirstName>{given name}</FirstName>

      <LastName>{family name}</LastName>

    </Contact>

      ⋮

  </Contacts>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 1571
    Content-Type: application/vnd.tmrk.cloud.admin.contact; type=collection
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Tue, 13 Sep 2011 21:20:18 GMT

  <Contacts href="/admin/contacts/organizations/1" type="application/vnd.tmrk.cloud.admin.contact;
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
        rel="up"/>

      <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/organizations/1/action/inviteUser" name="inviteUser"/>
```

```
    </Actions>
    <Contact href="/admin/contacts/1" name="Simpson, Homer"
      type="application/vnd.tmrk.cloud.admin.contact">
      <Links>
        <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
          rel="up"/>
        <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/organizations/1/action/inviteUser" name="inviteUser"/>
      </Actions>
      <FirstName>FirstName</FirstName>
      <LastName>LastName</LastName>
      <EmailAddress>simpson@gmail.com</EmailAddress>
    </Contact>
    <Contact href="/admin/contacts/2" name="Simpson, Homer"
      type="application/vnd.tmrk.cloud.admin.contact">
      <Links>
        <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
          rel="up"/>
        <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/organizations/1/action/inviteUser" name="inviteUser"/>
      </Actions>
      <FirstName>FirstName</FirstName>
      <LastName>LastName</LastName>
      <EmailAddress>simpson@gmail.com</EmailAddress>
    </Contact>
  </Contacts>
```

Return to *7.33 Contact*.

Return to *7 Application Programming Interface Reference Guide*.

7.33.2 Get Contacts by ID

The Get Contacts by ID call returns information regarding a specified contact for an organization.

Request

```
GET http://{Terremark URI}/admin/contacts/{contact identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/contacts/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.contact
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Contact href="/admin/contacts/{contact identifier}" name="{contact email local part}@{contact email
  domain part}" type="application/vnd.tmrk.cloud.admin.contact"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/users/organizations/organization/action/inviteUser" name="inviteUser"
      type="application/vnd.tmrk.cloud.admin.inviteUser"/>

  </Actions>

  <FirstName>{given name}</FirstName>

  <LastName>{family name}</LastName>

  <EmailAddress>{user email local part}@{user email domain part}</EmailAddress>

</Contact>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 538
  Content-Type: application/vnd.tmrk.cloud.admin.contact
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Jun 2011 23:04:22 GMT

<Contact href="/admin/contacts/1" name="simpson@gmail.com"
  type="application/vnd.tmrk.cloud.admin.contact" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>

  </Links>

  <Actions>
```

```
    <Action href="/admin/users/organizations/1/action/inviteUser" name="inviteUser"
      type="application/vnd.tmrk.cloud.admin.inviteUser"/>
  </Actions>
  <FirstName>FirstName</FirstName>
  <LastName>LastName</LastName>
  <EmailAddress>simpson@gmail.com</EmailAddress>
</Contact>
```

Return to *7.33 Contact*.

Return to *7 Application Programming Interface Reference Guide*.

7.34 API Key

7.34.1 Get API Keys 1030
7.34.2 Get API Keys by ID 1033
7.34.3 Action API Keys Create 1034
7.34.4 Action API Keys Edit 1036
7.34.5 Action API Keys Activate 1038
7.34.6 Action API Keys Deactivate 1040
7.34.7 Action API Keys Remove 1042

Advance to *7.35 Role*.

This section contains the calls for the API user key management.

Return to *7 Application Programming Interface Reference Guide*.

7.34.1 Get API Keys

The Get API Keys call returns information regarding API keys for a specified API user in an organization.

Request

```
GET http://{Terremark URI}/admin/apiKeys/users/{user identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/apiKeys/users/5
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
```

```
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ApiKeys href="/admin/apiKeys/users/{user identifier}" type="application/vnd.tmrk.cloud.admin.apiKey;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/users/{user identifier}/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>

  </Actions>

  <ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
    type="application/vnd.tmrk.cloud.admin.apiKey">

    <Links>

      <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
        part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

      <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

      <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>

      <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

      <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

    </Actions>

    <AccessKey>{access key}</AccessKey>

    <Status>{Active | Inactive}</Status>

  </ApiKey>

    ⋮

</ApiKeys>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2006
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 17 Oct 2011 19:47:57 GMT
```

```
<ApiKeys href="/admin/apiKeys/users/5" type="application/vnd.tmrk.cloud.admin.apiKey;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/5" name="User 5" type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/users/5/action/create" name="createApiKey"
      type="application/vnd.tmrk.cloud.admin.createApiKey"/>

  </Actions>

  <ApiKey href="/admin/apiKeys/1" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey">

    <Links>

      <Link href="/admin/users/5" name="User 5" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>

      <Link href="/admin/apiKeys/users/5" name="User 5" type="application/vnd.tmrk.cloud.admin.apiKey;
        type=collection" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/apiKeys/1" name="edit"/>

      <Action href="/admin/apiKeys/1/action/activate" name="activate" actionDisabled="disabled"/>

      <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>

      <Action href="/admin/apiKeys/1" name="remove"/>

    </Actions>

    <AccessKey>1111111111111111</AccessKey>

    <Status>Active</Status>

  </ApiKey>

  <ApiKey href="/admin/apiKeys/2" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey">

    <Links>

      <Link href="/admin/users/5" name="User 5" type="application/vnd.tmrk.cloud.admin.user"
        rel="up"/>

      <Link href="/admin/apiKeys/users/5" name="User 5" type="application/vnd.tmrk.cloud.admin.apiKey;
        type=collection" rel="up"/>

    </Links>

    <Actions>

      <Action href="/admin/apiKeys/2" name="edit"/>

      <Action href="/admin/apiKeys/2/action/activate" name="activate"/>

      <Action href="/admin/apiKeys/2/action/deactivate" name="deactivate" actionDisabled="disabled"/>

      <Action href="/admin/apiKeys/2" name="remove"/>

    </Actions>

    <AccessKey>2222222222222222</AccessKey>
```

```
    <Status>Inactive</Status>
  </ApiKey>
</ApiKeys>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.2 Get API Keys by ID

The Get API Keys by ID call returns information regarding a specified API key in an organization.

Note: This is the only call in which the private key is presented.

Request

```
GET http://{Terremark URI}/admin/apiKeys/{API key identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/apiKeys/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
  type="application/vnd.tmrk.cloud.admin.apiKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

    <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

    <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
```

```
    </Actions>
    <AccessKey>{access key}</AccessKey>
    <Status>{Active | Inactive}</Status>
    <PrivateKey>{private key}</PrivateKey>
  </ApiKey>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 871
    Content-Type: application/vnd.tmrk.cloud.admin.apiKey
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Mon, 17 Oct 2011 13:55:56 GMT
  <ApiKey href="/admin/apiKeys/1" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
      <Link href="/admin/apiKeys/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.apiKey;
        type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/1" name="edit"/>
      <Action href="/admin/apiKeys/1/action/activate" name="activate" actionDisabled="disabled"/>
      <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>
      <Action href="/admin/apiKeys/1" name="remove"/>
    </Actions>
    <AccessKey>1111111111111111</AccessKey>
    <Status>Active</Status>
    <PrivateKey>999999999999999999999999</PrivateKey>
  </ApiKey>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.3 Action API Keys Create

The Action API Keys Create call creates an API key for an API user in an organization. If successful, the call returns information regarding the API key that was created.

<Name> is required.

Note: The name must not exceed 30 characters, must begin with an alphabetic character, and may include alphanumeric, space, hyphen, or underscore characters.

To retrieve the private key, use the `href` on <ApiKey … > to retrieve the API key using **Get API Keys by ID**.

Live Specification Test Values

Condition	Outcome
User identifier mod 5 = 0	API User

Request

```
POST http://{Terremark URI}/admin/apiKeys/users/{user identifier}/action/create
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/apiKeys/users/5/action/create
```

Body

```
<CreateApiKey>
  <Name>{API key name}</Name> <!-- Required -->
</CreateApiKey>
```

EXAMPLE

```
<CreateApiKey>
  <Name>NewAPIKeyName</Name>
</CreateApiKey>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  Location: /admin/apiKeys/{API key identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
  type="application/vnd.tmrk.cloud.admin.apiKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
```

```
    <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"/>
    <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
    <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
  </Actions>
  <AccessKey>{access key}</AccessKey>
  <Status>{Active | Inactive}</Status>
</ApiKey>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 836
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  Location: /admin/apiKeys/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 17 Oct 2011 14:17:07 GMT
<ApiKey href="/admin/apiKeys/1" name="NewAPIKeyName" type="application/vnd.tmrk.cloud.admin.apiKey"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/5" name="API User, User5" type="application/vnd.tmrk.cloud.admin.user"
      rel="up"/>
    <Link href="/admin/apiKeys/users/5" name="API User, User5"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/1" name="edit"/>
    <Action href="/admin/apiKeys/1/action/activate" name="activate"/>
    <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>
    <Action href="/admin/apiKeys/1" name="remove"/>
  </Actions>
  <AccessKey>33333333333333333333333333333333</AccessKey>
  <Status>Active</Status>
</ApiKey>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.4 Action API Keys Edit

The Action API Keys Edit call edits the name of an API key. If successful, the call returns information regarding the API key that was modified.

The `name` attribute on <ApiKey … > is required and may be changed.

Note: The name must not exceed 30 characters, must begin with an alphabetic character, and may include alphanumeric, space, hyphen, or underscore characters.

<AccessKey> and <PrivateKey> are optional and ignored if present.

<Status> is optional and ignored if present. This element may be changed only using **Action API Keys Activate** and **Action API Keys Deactivate**.

Request

```
PUT http://{Terremark URI}/admin/apiKeys/{API key identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/apiKeys/1
```

Body

```
<ApiKey name="{API key name"> <!-- Required -->
  <AccessKey>{access key}</AccessKey> <!-- Optional, ignored if present -->
  <Status>{Active | inactive}</Status> <!-- Optional, ignored if present -->
  <PrivateKey>{private key}</PrivateKey> <!-- Optional, ignored if present -->
</ApiKey>
```

EXAMPLE

```
<ApiKey name="NewAPIKeyName"/>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
  type="application/vnd.tmrk.cloud.admin.apiKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

    <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"
```

```
      actionDisabled="{noAccess | disabled}"/>
    <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
    <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
  </Actions>
  <AccessKey>{access key}</AccessKey>
  <Status>{Active | Inactive}</Status>
</ApiKey>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 871
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 17 Oct 2011 14:56:14 GMT
<ApiKey href="/admin/apiKeys/1" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    <Link href="/admin/apiKeys/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/1" name="edit"/>
    <Action href="/admin/apiKeys/1/action/activate" name="activate" actionDisabled="disabled"/>
    <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>
    <Action href="/admin/apiKeys/1" name="remove"/>
  </Actions>
  <AccessKey>1111111111111111</AccessKey>
  <Status>Active</Status>
</ApiKey>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.5 Action API Keys Activate

The Action API Keys Activate call activates an API key. If successful, the call returns information regarding the API key that was activated.

Request

```
POST http://{Terremark URI}/admin/apiKeys/{API key identifier}/action/activate
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/apiKeys/2/action/activate
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
  type="application/vnd.tmrk.cloud.admin.apiKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

    <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>

    <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"
      actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>

    <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>

  </Actions>

  <AccessKey>{access key}</AccessKey>

  <Status>{Active | Inactive}</Status>

  <PrivateKey>{private key}</PrivateKey>

</ApiKey>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 822
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 17 Oct 2011 15:21:18 GMT

<ApiKey href="/admin/apiKeys/2" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
```

```
    <Link href="/admin/apiKeys/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.apiKey;
      type=collection" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/apiKeys/2" name="edit"/>
    <Action href="/admin/apiKeys/2/action/activate" name="activate"/>
    <Action href="/admin/apiKeys/2/action/deactivate" name="deactivate" actionDisabled="disabled"/>
    <Action href="/admin/apiKeys/2" name="remove"/>
  </Actions>
  <AccessKey>2222222222222222</AccessKey>
  <Status>Active</Status>
</ApiKey>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.6 Action API Keys Deactivate

The Action API Keys Deactivate call deactivates an API key. If successful, the call returns information regarding the API key that was deactivated.

Request

```
POST http://{Terremark URI}/admin/apiKeys/{API key identifier}/action/deactivate
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/apiKeys/1/action/deactivate
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.apiKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<ApiKey href="/admin/apiKeys/{API key identifier}" name="{API key name}"
  type="application/vnd.tmrk.cloud.admin.apiKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
    <Link href="/admin/apiKeys/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
```

```
      type="application/vnd.tmrk.cloud.admin.apiKey; type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/{API key identifier}" name="edit"/>
      <Action href="/admin/apiKeys/{API key identifier}/action/activate" name="activate"
        actionDisabled="{noAccess | disabled}"/>
      <Action href="/admin/apiKeys/{API key identifier}/action/deactivate" name="deactivate"/>
      <Action href="/admin/apiKeys/{API key identifier}" name="remove"/>
    </Actions>
    <AccessKey>{access key}</AccessKey>
    <Status>{Active | Inactive}</Status>
    <PrivateKey>{private key}</PrivateKey>
  </ApiKey>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 824
    Content-Type: application/vnd.tmrk.cloud.admin.apiKey
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Mon, 17 Oct 2011 15:23:49 GMT
  <ApiKey href="/admin/apiKeys/1" name="API Key" type="application/vnd.tmrk.cloud.admin.apiKey"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.user" rel="up"/>
      <Link href="/admin/apiKeys/users/1" name="User 1" type="application/vnd.tmrk.cloud.admin.apiKey;
        type=collection" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/apiKeys/1" name="edit"/>
      <Action href="/admin/apiKeys/1/action/activate" name="activate" actionDisabled="disabled"/>
      <Action href="/admin/apiKeys/1/action/deactivate" name="deactivate"/>
      <Action href="/admin/apiKeys/1" name="remove"/>
    </Actions>
    <AccessKey>1111111111111111</AccessKey>
    <Status>Inactive</Status>
  </ApiKey>
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.34.7 Action API Keys Remove

The Action API Keys Remove call removes an API key. If successful, the call returns a 204 No Content header.

Request

```
DELETE http://{Terremark URI}/admin/apiKeys/{API key identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/apiKeys/1
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 17 Oct 2011 15:25:31 GMT
```

Return to *7.34 API Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.35 Role

7.35.1 Get Roles 1043
7.35.2 Get Roles by User 1045
7.35.3 Get Roles by ID 1047
7.35.4 Action Roles Create 1051
7.35.5 Action Roles Edit 1053
7.35.6 Action Roles Edit User 1056
7.35.7 Action Roles Enable 1060
7.35.8 Action Roles Disable 1062
7.35.9 Action Roles Remove 1065

Advance to *7.36 Business Operation*.

This section contains the calls for the Role entities.

Return to *7 Application Programming Interface Reference Guide*.

7.35.1 Get Roles

The Get Roles call returns information regarding the roles for an organization.

<Status> refers to the status of the role. Permitted values are:

- **Active** – Role is available for use
- **Inactive** – Role is not available for use

<RoleType> refers to the level to which the role applies. Permitted values are:

- **Organization** – Role applies to organizational business operations
- **Environment** – Role applies to environmental business operations

<Category> refers to the definitional control of the role. Permitted values are:

- **System** – Role is defined by the Enterprise Cloud and may not be modified
- **Custom** – Role is defined by the organization and may be modified

Request

```
GET http://{Terremark URI}/admin/roles/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/roles/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.role; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Roles href="/admin/roles/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.role; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <RoleReference href="/admin/roles/{role identifier}" name="{role name}"
```

```
    type="application/vnd.tmrk.cloud.admin.role">
    <Status>{Active | Inactive}</Status>
    <RoleType>{Organization | Environment}</RoleType>
    <Category>{System | Custom}</Category>
  </RoleReference>
    ⋮
</Roles>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1934
  Content-Type: application/vnd.tmrk.cloud.admin.role; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 17:13:19 GMT

<RoleReferences href="/admin/roles/organizations/1" type="application/vnd.tmrk.cloud.admin.role;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  </Links>
  <RoleReference href="/admin/roles/1" name="Role 1" type="application/vnd.tmrk.cloud.admin.role">
    <Status>Active</Status>
    <RoleType>Organization</RoleType>
    <Category>System</Category>
  </RoleReference>
  <RoleReference href="/admin/roles/2" name="Role 2" type="application/vnd.tmrk.cloud.admin.role">
    <Status>Active</Status>
    <RoleType>Environment</RoleType>
    <Category>System</Category>
  </RoleReference>
  <RoleReference href="/admin/roles/3" name="Role 3" type="application/vnd.tmrk.cloud.admin.role">
    <Status>Active</Status>
    <RoleType>Organization</RoleType>
    <Category>System</Category>
  </RoleReference>
  <RoleReference href="/admin/roles/4" name="Role 4" type="application/vnd.tmrk.cloud.admin.role">
    <Status>Active</Status>
```

```
      <RoleType>Organization</RoleType>
      <Category>Custom</Category>
    </RoleReference>
    <RoleReference href="/admin/roles/5" name="Role 5" type="application/vnd.tmrk.cloud.admin.role">
      <Status>Inactive</Status>
      <RoleType>Organization</RoleType>
      <Category>Custom</Category>
    </RoleReference>
    <RoleReference href="/admin/roles/6" name="Role 6" type="application/vnd.tmrk.cloud.admin.role">
      <Status>Active</Status>
      <RoleType>Environment</RoleType>
      <Category>Custom</Category>
    </RoleReference>
    <RoleReference href="/admin/roles/7" name="Role 7" type="application/vnd.tmrk.cloud.admin.role">
      <Status>Inactive</Status>
      <RoleType>Environment</RoleType>
      <Category>Custom</Category>
    </RoleReference>
  </RoleReferences>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.2 Get Roles by User

The Get Roles by User call returns information regarding the roles assigned to a specified user in an organization.

Every <Environment> for an organization is listed under <UserRole>, including environments which are inactive or STARred or otherwise inaccessible to normal use. However, billing information remains available for some time after an environment becomes inaccessible. Inaccessible environments may have roles assigned to view billing. The `accessible` attribute on <Environment> is `false` when an environment is inaccessible and is not typically present if `accessible` is `true`. If the `href` is used to access an <Environment> on which `accessible` is `false`, an error is returned.

Note: Absence of <OrganizationRole> or of a <Role> in an <EnvironmentRole> indicates no access permitted to the organization level or to that environment, respectively.

Live Specification Test Values

Condition	Outcome
role identifier = 1	<IsAdmin>true</IsAdmin>

Condition	Outcome
role identifier = 2 or 6 or 7	environmental role
role identifier = 3 or 4 or 5	organizational role
role identifier = 1 or 2 or 3 or 4 or 6	<Active>true</Active>
role identifier = 5 or 7	<Active>false</Active>
role identifier = 1 or 2 or 3	<Category>Predefined</Category>
role identifier = 4 or 5 or 6 or 7	<Category>Custom</Category>

Request

```
GET http://{Terremark URI}/admin/roles/users/{user identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/roles/users/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.userRole
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>
```

```
    </EnvironmentRole>
      ⋮
  </EnvironmentRoles>
</UserRole>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 856
  Content-Type: application/vnd.tmrk.cloud.admin.userRole
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 21:45:37 GMT

<UserRole href="/admin/roles/users/4" type="application/vnd.tmrk.cloud.admin.userRole"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/users/4" name="user4@gmail.com" type="application/vnd.tmrk.cloud.admin.user"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/users/4" name="edit" type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>

      <Role href="/admin/roles/2" name="Predefined Role"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

    <EnvironmentRole>

      <Environment href="/environments/2" name="Environment 2"
        type="application/vnd.tmrk.cloud.environment"/>

      <Role href="/admin/roles/6" name="Custom Role" type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

  </EnvironmentRoles>

</UserRole>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.3 Get Roles by ID

The Get Roles by ID call returns information regarding a specified role in an organization.

<Link href="/admin/roles/{role identifier}/users" … > is present only on Roles with <RoleType> Organization<RoleType>.

<Link href="/admin/roles/{role identifier}/environments/{environment identifier}/users" name="{environment name}" … > is present only on Roles with <RoleType>Environment<RoleType> with one such link for each environment in the organization. The `name` attribute contains the name of the environment.

<RoleType> refers to the level to which the role applies. Permitted values are:

- **Organization** – Role applies to organizational business operations
- **Environment** – Role applies to environmental business operations

<Category> refers to the definitional control of the role. Permitted values are:

- **System** – Role is defined by the Enterprise Cloud and may not be modified
- **Custom** – Role is defined by the organization and may be modified

Live Specification Test Values

Condition	Outcome
role identifier = 1	<IsAdmin>true</IsAdmin>
role identifier = 2 or 6 or 7	environmental role
role identifier = 3 or 4 or 5	organizational role
role identifier = 1 or 2 or 3 or 4 or 6	<Active>true</Active>
role identifier = 5 or 7	<Active>false</Active>
role identifier = 1 or 2 or 3	<Category>Predefined</Category>
role identifier = 4 or 5 or 6 or 7	<Category>Custom</Category>

Request

```
GET http://{Terremark URI}/admin/roles/{role identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/roles/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Role href="/admin/roles/{role identifier}" name="{role name}"
```

```
    type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

    <Links>

      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

      <Link href="/admin/roles/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>

      <!-- The following link is present on roles with <RoleType>Organization</RoleType> -->

      <Link href="/admin/roles/{role identifier}/users" type="application/vnd.tmrk.cloud.admin.user;
        type=collection" rel="down"/>

      <!-- The following link is present on roles with <RoleType>Environment</RoleType> -->

      <Link href="/admin/roles/{role identifier}/environments/{environment identifier}/users"
        name="{environment name}" type="application/vnd.tmrk.cloud.admin.user; type=collection"
        rel="down"/>

        ⋮

      <!-- The above link recurs, one link for each environment -->

    </Links>

    <Actions>

      <Action href="/admin/roles/{role identifier}" name="edit"
        type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

      <Action href="/admin/roles/{role identifier}" name="remove" actionDisabled="{noAccess |
        disabled}"/>

      <Action href="/admin/roles/{role identifier}/action/enable" name="enableRole"
        type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

      <Action href="/admin/roles/{role identifier}/action/disable" name="disableRole"
        type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    </Actions>

    <RoleType>{Organization | Environment}</RoleType>

    <Active>{true | false}</Active>

    <Category>{System | Custom}</Category>

    <IsAdmin>{true | false}</IsAdmin>

    <BusinessOperations>

      <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
        name="business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/>

        ⋮

    </BusinessOperations>

  </Role>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 4358
```

```
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 17:14:08 GMT

<Role href="/admin/roles/1" name="Role 1" type="application/vnd.tmrk.cloud.admin.role"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Organization"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Organization" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

    <Link href="/admin/roles/organizations/1" name="Organization Roles"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>

    <Link href="/admin/roles/1/users" type="application/vnd.tmrk.cloud.admin.user; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/1" name="edit" type="application/vnd.tmrk.cloud.admin.role"
      actionDisabled="disabled"/>

    <Action href="/admin/roles/1" name="remove" actionDisabled="disabled"/>

    <Action href="/admin/roles/1/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>

    <Action href="/admin/roles/1/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>

  </Actions>

  <RoleType>Organization</RoleType>

  <Active>true</Active>

  <Category>System</Category>

  <IsAdmin>true</IsAdmin>

  <BusinessOperations>

    <BusinessOperation href="/admin/roles/businessOperations/3" name="Business Operation 3"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

    <BusinessOperation href="/admin/roles/businessOperations/6" name="Business Operation 6"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

    <BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

    <BusinessOperation href="/admin/roles/businessOperations/12" name="Business Operation 12"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

    <BusinessOperation href="/admin/roles/businessOperations/15" name="Business Operation 15"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

    <BusinessOperation href="/admin/roles/businessOperations/18" name="Business Operation 18"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>

  </BusinessOperations>
```

```
</Role>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.4 Action Roles Create

The Action Roles Create call creates a custom role in an organization. If successful, the call returns information regarding the role that was created.

<Name> is required and may not exceed thirty characters.

<Status> is optional. If not present, status is set to `Inactive`.

<BusinessOperations> and at least one <BusinessOperation> is required. The `href` on <BusinessOperation> is required to identify the business operation permitted by the role.

Request

```
POST http://{Terremark URI}/admin/roles/organizations/{organization identifier}/action/createRole
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/roles/organizations/1/action/createRole
```

Body

```
<CreateRole>
  <Name>{name}</Name> <!-- Required -->
  <Status>Active</Status> <!-- Optional -->
  <RoleType>{Organization | Environment}</RoleType> <!-- Required -->
  <BusinessOperations> <!-- Required -->
    <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
      name="{business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/> <!-
      - Required -->
  </BusinessOperations>
</CreateRole>
```

EXAMPLE

```
<CreateRole>
  <Name>Business Operation 9 Operator</Name>
  <Status>Active</Status>
  <RoleType>Organization</RoleType>
  <BusinessOperations>
    <BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>
```

```
    </BusinessOperations>
  </CreateRole>
```

Response

```
  HTTP/1.1 201 Created
    Content-Length: {length of response body}
    Content-Type: application/vnd.tmrk.cloud.admin.role
    Location: /admin/roles/{role identifier}
    x-tmrk-currentuser: /admin/users/{user identifier}
    x-tmrk-token: {token}
    Date: {timestamp of response}
  <Role href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Actions>
      <Action href="/admin/roles/{role identifier}" name="edit"
        type="application/vnd.tmrk.cloud.admin.role"/>
      <Action href="/admin/roles/{role identifier}" name="remove"/>
      <Action href="/admin/roles/{role identifier}/action/enable" name="enableRole"
        type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>
      <Action href="/admin/roles/{role identifier}/action/disable" name="disableRole"
        type="application/vnd.tmrk.cloud.admin.role"/>
    </Actions>
    <RoleType>Organization</RoleType>
    <Active>true</Active>
    <Category>Custom</Category>
    <IsAdmin>false</IsAdmin>
    <BusinessOperations>
      <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
        name="{business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/>
    </BusinessOperations>
  </Role>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 1101
    Content-Type: application/vnd.tmrk.cloud.admin.role
    Location: /admin/roles/1
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 14 Oct 2011 20:26:13 GMT
  <Role href="/admin/roles/1" name="Business Operation 9 Operator"
    type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Actions>
      <Action href="/admin/roles/1" name="edit" type="application/vnd.tmrk.cloud.admin.role"/>
```

```
    <Action href="/admin/roles/1" name="remove"/>
    <Action href="/admin/roles/1/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>
    <Action href="/admin/roles/1/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role"/>
  </Actions>
  <RoleType>Organization</RoleType>
  <Active>true</Active>
  <Category>Custom</Category>
  <IsAdmin>false</IsAdmin>
  <BusinessOperations>
    <BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
      type="application/vnd.tmrk.cloud.admin.businessOperation"/>
  </BusinessOperations>
</Role>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.5 Action Roles Edit

The Action Roles Edit call edits a custom role in an organization. If successful, the call returns information regarding the role that was modified.

The `name` attribute on <Role … > is required and may be changed.

Note: The `name` may not be changed to that of another role and may not exceed thirty characters.

<RoleType>, <Active>, <Category>, and <IsAdmin>are optional and ignored if present.

Note: To change the value of <Active>, use **Action Roles Enable** or **Action Roles Disable**.

<BusinessOperations> and at least one <BusinessOperation> is required. The `href` on <BusinessOperation> is required to identify the business operation permitted by the role. Including a <BusinessOperation> not currently on the role adds that business operation to the role.

Note: If a <BusinessOperation> is valued on the role and is not present in the call, that business operation is removed from the role.

Request

```
PUT http://{Terremark URI}/admin/roles/{role identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/roles/1
```

Body

```
<Role href="/admin/roles/{role identifier}" name="{role name}">
  <RoleType>{Organization | Environment}</RoleType> <!-- Optional, ignored if present -->
  <Active>{true | false}</Active> <!-- Optional, ignored if present -->
  <Category>{System | Custom}</Category> <!-- Optional, ignored if present -->
  <IsAdmin>{true | false}</IsAdmin> <!-- Optional, ignored if present -->
  <BusinessOperations> <!-- Required -->
    <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
      name="business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/> <!--
      Required -->
      ⋮
  </BusinessOperations>
</Role>
```

EXAMPLE

```
<Role name="Business Operation 12 Operator">
  <RoleType>Organization</RoleType>
  <Active>true</Active>
  <Category>Custom</Category>
  <IsAdmin>false</IsAdmin>
  <BusinessOperations>
    <BusinessOperation href="/admin/roles/businessOperations/12"/>
  </BusinessOperations>
</Role>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.role
  Location: /admin/roles/{role identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Role href="/admin/roles/{role identifier}" name="{role name}"
  type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
    <Link href="/admin/roles/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>
```

```
    <Link href="/admin/roles/{role identifier}/users" type="application/vnd.tmrk.cloud.admin.user;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/{role identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/roles/{role identifier}/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <RoleType>{Organization | Environment}</RoleType>

  <Active>{true | false}</Active>

  <Category>{System | Custom}</Category>

  <IsAdmin>{true | false}</IsAdmin>

  <BusinessOperations>

    <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
      name="business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/>

      ⋮

  </BusinessOperations>

</Role>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 970
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 21:09:44 GMT

<Role href="/admin/roles/1" name="Business Operation 12 Operator"
  type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Actions>

    <Action href="/admin/roles/1" name="edit" type="application/vnd.tmrk.cloud.admin.role"/>

    <Action href="/admin/roles/1" name="remove"/>

    <Action href="/admin/roles/1/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>

    <Action href="/admin/roles/1/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role"/>

  </Actions>

  <RoleType>Organization</RoleType>
```

```
    <Active>true</Active>
    <Category>Custom</Category>
    <IsAdmin>false</IsAdmin>
    <BusinessOperations>
      <BusinessOperation href="/admin/roles/businessOperations/12" name="Business Operation 12"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
    </BusinessOperations>
  </Role>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.6 Action Roles Edit User

The Action Roles Edit User call edits the roles assigned to a specified user in an organization. If successful, the call returns information regarding the user that was modified.

Note: Absence of <OrganizationRole> or of a <Role> in an <EnvironmentRole> indicates no access permitted to the organization level or to that environment, respectively.

<OrganizationRole> is optional. Including an <OrganizationRole … > not currently on the user adds that organization role to the user. The `href` attribute is required to identify the organization role to which the user is assigned. The `href` used must be that of a <Role> with a subordinate <RoleType>Organization</RoleType>.

Note: If a user has an organization role and the <OrganizationRole … > is not present in the body, the organization role is removed from the user.

Both <EnvironmentRoles> and <EnvironmentRole> are optional. Including a <Role … > with an <Environment … > (under an <EnvironmentRole>) not currently on the user adds that environment role in that environment to the user. If an <EnvironmentRole> (with an <Environment … >and a <Role … >) is not present in the body but present on the user, that environment role is unchanged. If an <EnvironmentRole> has an <Environment … > but the <Role … > is absent and the environment role is present on the user, that environment role is removed in that environment from the user. To summarize:

Source	Body	Outcome
<EnvironmentRoles> </EnvironmentRoles> ***or*** <EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>
<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>
<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> <Role href="/admin/roles/2" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> </EnvironmentRole> </EnvironmentRoles>	<EnvironmentRoles> <EnvironmentRole> <Environment href="/environments/1" …/> </EnvironmentRole> </EnvironmentRoles>

Live Specification Test Values

Condition	Outcome
role identifier = 1	<IsAdmin>true</IsAdmin>
role identifier = 2 or 6 or 7	environmental role
role identifier = 3 or 4 or 5	organizational role
role identifier = 1 or 2 or 3 or 4 or 6	<Active>true</Active>
role identifier = 5 or 7	<Active>false</Active>
role identifier = 1 or 2 or 3	<Category>Predefined</Category>
role identifier = 4 or 5 or 6 or 7	<Category>Custom</Category>

Request

```
PUT http://{Terremark URI}/admin/roles/users/{user identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/roles/users/4
```

Body

```
<UserRole>
  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/> <!-- Optional -->
  <EnvironmentRoles> <!-- Optional -->
    <EnvironmentRole> <!-- Optional -->
      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment"/> <!-- Required -->
      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/> <!-- Optional -->
    </EnvironmentRole>
      ⋮
  </EnvironmentRoles>
</UserRole>
```

EXAMPLE

```
<UserRole>
  <EnvironmentRoles>
    <EnvironmentRole>
      <Environment href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>
      <Role href="/admin/roles/2" name="Predefined Role"
        type="application/vnd.tmrk.cloud.admin.role"/>
    </EnvironmentRole>
    <EnvironmentRole>
      <Environment href="/environments/2" name="Environment 2"
        type="application/vnd.tmrk.cloud.environment"/>
      <Role href="/admin/roles/2" name="Predefined Role"
        type="application/vnd.tmrk.cloud.admin.role"/>
    </EnvironmentRole>
  </EnvironmentRoles>
</UserRole>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.userRole
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
```

```
  Date: {timestamp of response}

<UserRole href="/admin/roles/users/{user identifier}"
  type="application/vnd.tmrk.cloud.admin.userRole" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Actions>

    <Action href="/admin/roles/users/{user identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <OrganizationRole href="/admin/roles/{role identifier}" name="{role name}"
    type="application/vnd.tmrk.cloud.admin.role"/>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/{environment identifier}" name="{environment name}"
        type="application/vnd.tmrk.cloud.environment" accessible="{true | false}"/>

      <Role href="/admin/roles/{role identifier}" name="{role name}"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

      ⋮

  </EnvironmentRoles>

</UserRole>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 856
  Content-Type: application/vnd.tmrk.cloud.admin.userRole
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Tue, 13 Sep 2011 21:45:37 GMT

<UserRole href="/admin/roles/users/4" type="application/vnd.tmrk.cloud.admin.userRole"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Actions>

    <Action href="/admin/roles/users/4" name="edit" type="application/vnd.tmrk.cloud.admin.userRole"/>

  </Actions>

  <EnvironmentRoles>

    <EnvironmentRole>

      <Environment href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>

      <Role href="/admin/roles/2" name="Predefined Role"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

    <EnvironmentRole>

      <Environment href="/environments/2" name="Environment 2"
        type="application/vnd.tmrk.cloud.environment"/>
```

```
      <Role href="/admin/roles/2" name="Predefined Role"
        type="application/vnd.tmrk.cloud.admin.role"/>

    </EnvironmentRole>

  </EnvironmentRoles>

</UserRole>
```

7.35.7 Action Roles Enable

The Action Roles Enable call enables a role in an organization. If successful, the call returns information regarding the role that was enabled.

Note: To enable a role, the role must have <Active>false</Active>.

Request

```
POST http://{Terremark URI}/admin/roles/{role identifier}/action/enable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/roles/5/action/enable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Role href="/admin/roles/{role identifier}" name="{role name}"
  type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/roles/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>

    <Link href="/admin/roles/{role identifier}/users" type="application/vnd.tmrk.cloud.admin.user;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/{role identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>
```

```
    <Action href="/admin/roles/{role identifier}/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <RoleType>{Organization | Environment}</RoleType>

  <Active>{true | false}</Active>

  <Category>{System | Custom}</Category>

  <IsAdmin>{true | false}</IsAdmin>

  <BusinessOperations>

    <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
      name="business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/>

      ⋮

  </BusinessOperations>

</Role>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 4281
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 21:21:05 GMT

<Role href="/admin/roles/5" name="Role 5" type="application/vnd.tmrk.cloud.admin.role"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Organization"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Organization" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

    <Link href="/admin/roles/organizations/1" name="Organization Roles"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>

    <Link href="/admin/roles/5/users" type="application/vnd.tmrk.cloud.admin.user; type=collection"
      rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/5" name="edit" type="application/vnd.tmrk.cloud.admin.role"/>

    <Action href="/admin/roles/5" name="remove"/>

    <Action href="/admin/roles/5/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>

    <Action href="/admin/roles/5/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role"/>

  </Actions>
```

```
    <RoleType>Organization</RoleType>
    <Active>true</Active>
    <Category>Custom</Category>
    <IsAdmin>false</IsAdmin>
    <BusinessOperations>
      <BusinessOperation href="/admin/roles/businessOperations/3" name="Business Operation 3"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/6" name="Business Operation 6"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/12" name="Business Operation 12"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/15" name="Business Operation 15"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/18" name="Business Operation 18"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
    </BusinessOperations>
  </Role>
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.8 Action Roles Disable

The Action Roles Disable call disables a role in an organization. If successful, the call returns information regarding the role that was disabled.

Note: To enable a role, the role must have <Active>true</Active>.

Note: The role must have no users assigned to disable.

Request

```
POST http://{Terremark URI}/admin/roles/{role identifier}/action/disable
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/roles/1/action/disable
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.role
```

```
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Role href="/admin/roles/{role identifier}" name="{role name}"
  type="application/vnd.tmrk.cloud.admin.role" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/roles/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>

    <Link href="/admin/roles/{role identifier}/users" type="application/vnd.tmrk.cloud.admin.user;
      type=collection" rel="down"/>

  </Links>

  <Actions>

    <Action href="/admin/roles/{role identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

    <Action href="/admin/roles/{role identifier}/action/enable" name="enableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

    <Action href="/admin/roles/{role identifier}/action/disable" name="disableRole"
      type="application/vnd.tmrk.cloud.admin.role" actionDisabled="{noAccess | disabled}"/>

  </Actions>

  <RoleType>{Organization | Environment}</RoleType>

  <Active>{true | false}</Active>

  <Category>{System | Custom}</Category>

  <IsAdmin>{true | false}</IsAdmin>

  <BusinessOperations>

    <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
      name="business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"/>

      ⋮

  </BusinessOperations>

</Role>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 4281
  Content-Type: application/vnd.tmrk.cloud.admin.role
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 21:24:53 GMT

<Role href="/admin/roles/1" name="Role 1" type="application/vnd.tmrk.cloud.admin.role"
```

```
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/organizations/1" name="Organization"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/1" name="Organization" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
      <Link href="/admin/roles/organizations/1" name="Organization Roles"
        type="application/vnd.tmrk.cloud.admin.role; type=collection" rel="up"/>
      <Link href="/admin/roles/1/users" type="application/vnd.tmrk.cloud.admin.user; type=collection"
        rel="down"/>
    </Links>
    <Actions>
      <Action href="/admin/roles/1" name="edit" type="application/vnd.tmrk.cloud.admin.role"/>
      <Action href="/admin/roles/1" name="remove"/>
      <Action href="/admin/roles/1/action/enable" name="enableRole"
        type="application/vnd.tmrk.cloud.admin.role"/>
      <Action href="/admin/roles/1/action/disable" name="disableRole"
        type="application/vnd.tmrk.cloud.admin.role" actionDisabled="disabled"/>
    </Actions>
    <RoleType>Organization</RoleType>
    <Active>false</Active>
    <Category>System</Category>
    <IsAdmin>true</IsAdmin>
    <BusinessOperations>
      <BusinessOperation href="/admin/roles/businessOperations/3" name="Business Operation 3"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/6" name="Business Operation 6"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/12" name="Business Operation 12"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/15" name="Business Operation 15"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
      <BusinessOperation href="/admin/roles/businessOperations/18" name="Business Operation 18"
        type="application/vnd.tmrk.cloud.admin.businessOperation"/>
    </BusinessOperations>
  </Role>
```


Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.35.9 Action Roles Remove

The Action Roles Remove call removes a custom role from an organization. If successful, the call returns a 204 No Content header.

Note: The role must have no users assigned to remove.

Request

```
DELETE http://{Terremark URI}/admin/roles/{role identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/roles/1
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 21:28:59 GMT
```

Return to *7.35 Role*.

Return to *7 Application Programming Interface Reference Guide*.

7.36 Business Operation

7.36.1 Get Business Operations.....1065

7.36.2 Get Business Operations by ID 1072

Advance to *7.37 Audit Log*.

This section contains the calls for the Role entities. Security is provided at the level of business operations.

Return to *7 Application Programming Interface Reference Guide*.

7.36.1 Get Business Operations

The Get Business Operations call returns information regarding business operations defined in the Enterprise Cloud.

<BusinessOperationType> refers to the level to which the business operation applies. Permitted values are:

- **Organization** – Business operation applies to organizational operations
- **Environment** – Business operation applies to environmental operations

Request

```
GET http://{Terremark URI}/admin/roles/organizations/{organization identifier}/businessOperations
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/roles/organizations/1/businessOperations
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.businessOperation; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BusinessOperations href="/admin/roles/organizations/{organization identifier}/businessOperations"
  type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
    name="{business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation">

    <Links>

      <Link href="/admin/roles/organizations/{organization identifier}/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>

    </Links>

    <BusinessOperationType>{Organization | Environment}</BusinessOperationType>

    <Description>{textual description}</Description>

    <IsAssignable>{true | false}</IsAssignable>

  </BusinessOperation>

    ⋮

</BusinessOperations>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 10424
```

```
  Content-Type: application/vnd.tmrk.cloud.admin.businessOperation; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 14 Oct 2011 21:45:51 GMT

<BusinessOperations href="/admin/roles/organizations/1/businessOperations"
  type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

  </Links>

  <BusinessOperation href="/admin/roles/businessOperations/1" name="Business Operation 1"
    type="application/vnd.tmrk.cloud.admin.businessOperation">

    <Links>

      <Link href="/admin/roles/organizations/1/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>

    </Links>

    <BusinessOperationType>Environment</BusinessOperationType>

    <Description>Business Operation 1</Description>

    <IsAssignable>false</IsAssignable>

  </BusinessOperation>

  <BusinessOperation href="/admin/roles/businessOperations/2" name="Business Operation 2"
    type="application/vnd.tmrk.cloud.admin.businessOperation">

    <Links>

      <Link href="/admin/roles/organizations/1/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>

    </Links>

    <BusinessOperationType>Environment</BusinessOperationType>

    <Description>Business Operation 2</Description>

    <IsAssignable>false</IsAssignable>

  </BusinessOperation>

  <BusinessOperation href="/admin/roles/businessOperations/3" name="Business Operation 3"
    type="application/vnd.tmrk.cloud.admin.businessOperation">

    <Links>

      <Link href="/admin/roles/organizations/1/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>

    </Links>

    <BusinessOperationType>Organization</BusinessOperationType>

    <Description>Business Operation 3</Description>

    <IsAssignable>false</IsAssignable>
```

```
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/4" name="Business Operation 4"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 4</Description>
 <IsAssignable>true</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/5" name="Business Operation 5"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 5</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/6" name="Business Operation 6"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Organization</BusinessOperationType>
 <Description>Business Operation 6</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/7" name="Business Operation 7"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 7</Description>
 <IsAssignable>false</IsAssignable>
```

```
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/8" name="Business Operation 8"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 8</Description>
 <IsAssignable>true</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/9" name="Business Operation 9"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Organization</BusinessOperationType>
 <Description>Business Operation 9</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/10" name="Business Operation 10"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 10</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/11" name="Business Operation 11"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 11</Description>
 <IsAssignable>false</IsAssignable>
```

```
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/12" name="Business Operation 12"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Organization</BusinessOperationType>
 <Description>Business Operation 12</Description>
 <IsAssignable>true</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/13" name="Business Operation 13"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 13</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/14" name="Business Operation 14"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 14</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/15" name="Business Operation 15"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Organization</BusinessOperationType>
 <Description>Business Operation 15</Description>
 <IsAssignable>false</IsAssignable>
```

```
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/16" name="Business Operation 16"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 16</Description>
 <IsAssignable>true</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/17" name="Business Operation 17"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 17</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/18" name="Business Operation 18"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Organization</BusinessOperationType>
 <Description>Business Operation 18</Description>
 <IsAssignable>false</IsAssignable>
</BusinessOperation>
<BusinessOperation href="/admin/roles/businessOperations/19" name="Business Operation 19"
 type="application/vnd.tmrk.cloud.admin.businessOperation">
 <Links>
  <Link href="/admin/roles/organizations/1/businessOperations"
   type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
 </Links>
 <BusinessOperationType>Environment</BusinessOperationType>
 <Description>Business Operation 19</Description>
 <IsAssignable>false</IsAssignable>
```

```
    </BusinessOperation>
    <BusinessOperation href="/admin/roles/businessOperations/20" name="Business Operation 20"
      type="application/vnd.tmrk.cloud.admin.businessOperation">
      <Links>
        <Link href="/admin/roles/organizations/1/businessOperations"
          type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
      </Links>
      <BusinessOperationType>Environment</BusinessOperationType>
      <Description>Business Operation 20</Description>
      <IsAssignable>true</IsAssignable>
    </BusinessOperation>
  </BusinessOperations>
```

Return to *7.36 Business Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.36.2 Get Business Operations by ID

The Get Business Operations by ID call returns information regarding a specified business operation defined in the Enterprise Cloud.

<BusinessOperationType> refers to the level to which the business operation applies. Permitted values are:

- **Organization** – Business operation applies to organizational operations
- **Environment** – Business operation applies to environmental operations

Request

```
GET http://{Terremark URI}/admin/roles/businessOperations/{business operation identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/roles/businessOperations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.businessOperation
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BusinessOperation href="/admin/roles/businessOperations/{business operation identifier}"
  name="{business operation name}" type="application/vnd.tmrk.cloud.admin.businessOperation"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <Links>
      <Link href="/admin/roles/organizations/{organization identifier}/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
    </Links>
    <BusinessOperationType>{Organization | Environment}</BusinessOperationType>
    <Description>{textual description}</Description>
    <IsAssignable>{true | false}</IsAssignable>
  </BusinessOperation>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 10424
    Content-Type: application/vnd.tmrk.cloud.admin.businessOperation
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Fri, 14 Oct 2011 21:45:51 GMT
  <BusinessOperation href="/admin/roles/businessOperations/1" name="Business Operation 1"
    type="application/vnd.tmrk.cloud.admin.businessOperation"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/roles/organizations/1/businessOperations"
        type="application/vnd.tmrk.cloud.admin.businessOperation; type=collection" rel="up"/>
    </Links>
    <BusinessOperationType>Environment</BusinessOperationType>
    <Description>Business Operation 1</Description>
    <IsAssignable>false</IsAssignable>
  </BusinessOperation>
```

Return to *7.36 Business Operation*.

Return to *7 Application Programming Interface Reference Guide*.

7.37 Audit Log

7.37.1 Get Audit Logs.....1073

Advance to *7.38 Bandwidth*.

This section contains the calls for the Audit Log entity.

Return to *7 Application Programming Interface Reference Guide*.

7.37.1 Get Audit Logs

The Get Audit Logs call returns information regarding the audit log. The audit log is a history of changes to the users in an organization. Audit log entries are retained for twelve months.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

This call may include optional query parameters. Separate query parameters from the call URI with a question mark (`?`) and separate parameters from each other with an ampersand (`&`). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = page 1
pageSize	Number of items returned per page between 1 and 1000; default = 20
user	The `href` from the <User> by which to filter log entries selected.
action	Action by which to filter log entries selected. Actions must be specified as: • IncorrectAnswer • LoginFailed • LoginSucceeded
startDate	Enter in ISO8601 format; time is always start of day and ignored if present; default = earliest record
endDate	Enter in ISO8601 format; time is always end of day and ignored if present; default = latest record
direction	asc ascending desc descending default = descending
sortBy	All AuditLogItem elements are permitted as the sort key: • Date • Name • UserName • Action • Details • Origin • SourceIP • Notes

Request

```
GET http://{Terremark URI}/admin/organizations/{organization identifier}/auditLog
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/organizations/1/auditLog
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
```

```
  Content-Length: 915
  Content-Type: application/vnd.tmrk.cloud.admin.auditLogEntry; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AuditLog href="/admin/organizations/{organization identifier}/auditLog" name="{audit log name}"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}/auditLog?sortBy={Date | Name | UserName
      | Action | Details | Origin | SourceIP | Notes}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}&amp;user={user email local part}@{user email domain
      part}&amp;action={IncorrectAnswer | LoginFailed | LoginSucceeded}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="first"/>

    <Link href="/admin/organizations/{organization identifier}/auditLog?sortBy={Date | Name | UserName
      | Action | Details | Origin | SourceIP | Notes}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}&amp;user={user email local part}@{user email domain
      part}&amp;action={IncorrectAnswer | LoginFailed | LoginSucceeded}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="previous"/>

    <Link href="/admin/organizations/{organization identifier}/auditLog?sortBy={Date | Name | UserName
      | Action | Details | Origin | SourceIP | Notes}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}&amp;user={user email local part}@{user email domain
      part}&amp;action={IncorrectAnswer | LoginFailed | LoginSucceeded}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="next"/>

    <Link href="/admin/organizations/{organization identifier}/auditLog?sortBy={Date | Name | UserName
      | Action | Details | Origin | SourceIP | Notes}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}&amp;user={user email local part}@{user email domain
      part}&amp;action={IncorrectAnswer | LoginFailed | LoginSucceeded}"
      type="application/vnd.tmrk.cloud.task; type=collection" rel="last"/>

  </Links>

  <AuditLogItem>

    <Date>{timestamp}</Date>

    <User href="/admin/users/{user identifier}" name="{{user email local part}@{user email domain
      part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user">

      <FirstName>{given name}</FirstName>

      <LastName>{family name}</LastName>
```

```
    </User>
    <Action>{log activity}</Action>
    <Details>{textual description}</Details>
    <Origin>{Web | Api}</Origin>
    <SourceIp>{source IP address}</SourceIp>
  </AuditLogItem>
    ⋮
</AuditLog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 9199
  Content-Type: application/vnd.tmrk.cloud.admin.auditLog
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Sep 2011 13:49:54 GMT

<AuditLog href="/admin/organizations/1/auditLog" type="application/vnd.tmrk.cloud.admin.auditLog"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
    <Link href="/admin/organizations/1/auditLog?page=2"
      type="application/vnd.tmrk.cloud.admin.auditLog" rel="next"/>
    <Link href="/admin/organizations/1/auditLog?page=50"
      type="application/vnd.tmrk.cloud.admin.auditLog" rel="last"/>
  </Links>
  <AuditLogItem>
    <Date>2011-09-15T06:29:54.8070346Z</Date>
    <User href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname1</FirstName>
      <LastName>lastname1</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.1</SourceIp>
    <Notes>Forwarded for: 10.25.3.1000</Notes>
  </AuditLogItem>
  <AuditLogItem>
```

```
    <Date>2011-09-15T06:28:54.8070346Z</Date>
    <User href="/admin/users/5" name="user5@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname5</FirstName>
      <LastName>lastname5</LastName>
    </User>
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.10</SourceIp>
    <Notes>Forwarded for: 10.25.3.999</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:27:54.8070346Z</Date>
    <User href="/admin/users/4" name="user4@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname4</FirstName>
      <LastName>lastname4</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.9</SourceIp>
    <Notes>Forwarded for: 10.25.3.998</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:26:54.8070346Z</Date>
    <User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname3</FirstName>
      <LastName>lastname3</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.8</SourceIp>
    <Notes>Forwarded for: 10.25.3.997</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:25:54.8070346Z</Date>
```

```
    <User href="/admin/users/2" name="user2@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname2</FirstName>
      <LastName>lastname2</LastName>
    </User>
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.7</SourceIp>
    <Notes>Forwarded for: 10.25.3.996</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:24:54.8070346Z</Date>
    <User href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname1</FirstName>
      <LastName>lastname1</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.6</SourceIp>
    <Notes>Forwarded for: 10.25.3.995</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:23:54.8070346Z</Date>
    <User href="/admin/users/5" name="user5@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname5</FirstName>
      <LastName>lastname5</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.5</SourceIp>
    <Notes>Forwarded for: 10.25.3.994</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:22:54.8070346Z</Date>
    <User href="/admin/users/4" name="user4@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
```

```
      <FirstName>firstname4</FirstName>
      <LastName>lastname4</LastName>
    </User>
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.4</SourceIp>
    <Notes>Forwarded for: 10.25.3.993</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:21:54.8070346Z</Date>
    <User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname3</FirstName>
      <LastName>lastname3</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.3</SourceIp>
    <Notes>Forwarded for: 10.25.3.992</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:20:54.8070346Z</Date>
    <User href="/admin/users/2" name="user2@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname2</FirstName>
      <LastName>lastname2</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.2</SourceIp>
    <Notes>Forwarded for: 10.25.3.991</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:19:54.8070346Z</Date>
    <User href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname1</FirstName>
```

```
      <LastName>lastname1</LastName>
    </User>
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.1</SourceIp>
    <Notes>Forwarded for: 10.25.3.990</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:18:54.8070346Z</Date>
    <User href="/admin/users/5" name="user5@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname5</FirstName>
      <LastName>lastname5</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.10</SourceIp>
    <Notes>Forwarded for: 10.25.3.989</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:17:54.8070346Z</Date>
    <User href="/admin/users/4" name="user4@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname4</FirstName>
      <LastName>lastname4</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.9</SourceIp>
    <Notes>Forwarded for: 10.25.3.988</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:16:54.8070346Z</Date>
    <User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname3</FirstName>
      <LastName>lastname3</LastName>
```

```
    </User>
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.8</SourceIp>
    <Notes>Forwarded for: 10.25.3.987</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:15:54.8070346Z</Date>
    <User href="/admin/users/2" name="user2@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname2</FirstName>
      <LastName>lastname2</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.7</SourceIp>
    <Notes>Forwarded for: 10.25.3.986</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:14:54.8070346Z</Date>
    <User href="/admin/users/1" name="user1@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname1</FirstName>
      <LastName>lastname1</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.6</SourceIp>
    <Notes>Forwarded for: 10.25.3.985</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:13:54.8070346Z</Date>
    <User href="/admin/users/5" name="user5@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname5</FirstName>
      <LastName>lastname5</LastName>
    </User>
```

```
    <Action>Login Succeeded</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.5</SourceIp>
    <Notes>Forwarded for: 10.25.3.984</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:12:54.8070346Z</Date>
    <User href="/admin/users/4" name="user4@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname4</FirstName>
      <LastName>lastname4</LastName>
    </User>
    <Action>Incorrect Answer</Action>
    <Details/>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.4</SourceIp>
    <Notes>Forwarded for: 10.25.3.983</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:11:54.8070346Z</Date>
    <User href="/admin/users/3" name="user3@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname3</FirstName>
      <LastName>lastname3</LastName>
    </User>
    <Action>Login Failed</Action>
    <Details>Primary Authentication Failed: Invalid password.</Details>
    <Origin>Web</Origin>
    <SourceIp>10.1.1.3</SourceIp>
    <Notes>Forwarded for: 10.25.3.982</Notes>
  </AuditLogItem>
  <AuditLogItem>
    <Date>2011-09-15T06:10:54.8070346Z</Date>
    <User href="/admin/users/2" name="user2@gmail.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>firstname2</FirstName>
      <LastName>lastname2</LastName>
    </User>
    <Action>Login Succeeded</Action>
```

```
      <Details/>
      <Origin>Web</Origin>
      <SourceIp>10.1.1.2</SourceIp>
      <Notes>Forwarded for: 10.25.3.981</Notes>
    </AuditLogItem>
    <TotalCount>1000</TotalCount>
  </AuditLog>
```

Return to *7.37 Audit Log*.

Return to *7 Application Programming Interface Reference Guide*.

7.38 Bandwidth

7.38.1 Get Bandwidth Period 1083

7.38.2 Get Bandwidth Usage 1084

Advance to *7.39 Alert*.

This section contains the calls for the Bandwidth Period and Bandwidth Usage entities.

Return to *7 Application Programming Interface Reference Guide*.

7.38.1 Get Bandwidth Period

The Get Bandwidth Period call returns the periods for which bandwidth utilization is available. The available periods are the previous twelve months or the beginning of service, whichever is less.

Request

```
GET http://{Terremark URI}/admin/bandwidth/organizations/{organization identifier}/periods
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/bandwidth/organizations/1/periods
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.bandwidthPeriods
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BandwidthPeriods href="/admin/bandwidth/organizations/{organization identifier}/periods"
  type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
```

```
  <Links>
    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  </Links>
  <BandwidthPeriod href="/admin/bandwidth/organizations/{organization identifier}/usage/{4-digit
    period year}/{1 to 2 digit period month}" name="Bandwidth Usage ({period month name}, {4-digit
    period year})" type="application/vnd.tmrk.cloud.admin.bandwidthUsage"/>
    ⋮
</BandwidthPeriods>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 746
  Content-Type: application/vnd.tmrk.cloud.admin.bandwidthPeriods
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 23 May 2011 14:27:12 GMT
<BandwidthPeriods href="/admin/bandwidth/organizations/1/periods"
  type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>
  </Links>
  <BandwidthPeriod href="/admin/bandwidth/organizations/1/usage/2011/2" name="Bandwidth Usage
    (February, 2011)" type="application/vnd.tmrk.cloud.admin.bandwidthUsage"/>
  <BandwidthPeriod href="/admin/bandwidth/organizations/1/usage/2011/3" name="Bandwidth Usage (March,
    2011)" type="application/vnd.tmrk.cloud.admin.bandwidthUsage"/>
  <BandwidthPeriod href="/admin/bandwidth/organizations/1/usage/2011/4" name="Bandwidth Usage (April,
    2011)" type="application/vnd.tmrk.cloud.admin.bandwidthUsage"/>
</BandwidthPeriods>
```

Return to *7.38 Bandwidth*.

Return to *7 Application Programming Interface Reference Guide*.

7.38.2 Get Bandwidth Usage

The Get Bandwidth Usage call returns bandwidth usage in the requested period. The historical usage contains monthly usage for the previous twelve months or the beginning of service, whichever is less.

Request

```
GET http://{Terremark URI}/admin/bandwidth/organizations/{organization identifier}/usage/{4 digit
  year}/{1 to 2 digit period month}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/bandwidth/organizations/1/usage/2011/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.bandwidthUsage
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<BandwidthUsage href="/admin/bandwidth/organizations/{organization identifier}/usage/{4 digit
  year}/{1 to 2 digit month}" name="Bandwidth Usage ({month name}, {4 digit year})”
  type="application/vnd.tmrk.cloud.admin.bandwidthUsage" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <TotalUsage>

    <Billable>

      <Unit>{unit of value}</Units>

      <Value>{total billable}</Value>

    </Billable>

    <Burst>

      <Unit>{unit of value}</Units>

      <Value>{total in burst mode}</Value>

    </Burst>

    <In>

      <Unit>{unit of value}</Units>

      <Value>{total received}</Value>

    </In>

    <Out>

      <Unit>{unit of value}</Units>

      <Value>{total transmitted}</Value>

    </Out>

  </TotalUsage>

  <IpStatistics>

    <IpAddress name="{public IP address}">
```

```
      <In>
        <Unit>{unit of value}</Units>
        <Value>{received}</Value>
      </In>
      <Out>
        <Unit>{unit of value}</Units>
        <Value>{transmitted}</Value>
      </Out>
    </IpAddress>
      ⋮
  </IpStatistics>
  <HistoricalUsages>
    <HistoricalUsage>
      <Month>{1 to 2 digit month}</Month>
      <Year>{4 digit year}</Year>
      <Billable>
        <Unit>{unit of value}</Units>
        <Value>{billable usage}</Value>
      </Billable>
      <Burst>
        <Unit>{unit of value}</Units>
        <Value>{burst mode usage}</Value>
      </Burst>
      <Total>
        <Unit>{unit of value}</Units>
        <Value>{total usage}</Value>
      </Total>
    </HistoricalUsage>
      ⋮
  </HistoricalUsages>
</BandwidthUsage>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1653
  Content-Type: application/vnd.tmrk.cloud.admin.bandwidthUsage
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 04 Nov 2011 20:43:43 GMT

<BandwidthUsage href="/admin/bandwidth/organizations/1/usage/2011/4" name="Bandwidth Usage (April,
```

```
2011)" type="application/vnd.tmrk.cloud.admin.bandwidthUsage"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

<Links>

  <Link href="/admin/organizations/1" name="Organization 1"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
    rel="up"/>

  <Link href="/admin/bandwidth/organizations/1/periods"
    type="application/vnd.tmrk.cloud.admin.bandwidthPeriods" rel="up"/>

</Links>

<TotalUsage>

  <Billable>

    <Unit>Mbps</Unit>

    <Value>2.1</Value>

  </Billable>

  <Burst>

    <Unit>Mbps</Unit>

    <Value>5.5</Value>

  </Burst>

  <In>

    <Unit>GB</Unit>

    <Value>218.1</Value>

  </In>

  <Out>

    <Unit>GB</Unit>

    <Value>44.4</Value>

  </Out>

</TotalUsage>

<IpStatistics>

  <IpAddress name="72.46.238.11">

    <In>

      <Unit>MB</Unit>

      <Value>4286.71</Value>

    </In>

    <Out>

      <Unit>MB</Unit>

      <Value>43.32</Value>

    </Out>
```

```
    </IpAddress>
    <IpAddress name="72.46.238.10">
      <In>
        <Unit>MB</Unit>
        <Value>579.86</Value>
      </In>
      <Out>
        <Unit>MB</Unit>
        <Value>84.54</Value>
      </Out>
    </IpAddress>
  </IpStatistics>
  <HistoricalUsages>
    <HistoricalUsage>
      <Month>3</Month>
      <Year>2011</Year>
      <Billable>
        <Unit>Mbps</Unit>
        <Value>5.7</Value>
      </Billable>
      <Burst>
        <Unit>Mbps</Unit>
        <Value>8.1</Value>
      </Burst>
      <Total>
        <Unit>GB</Unit>
        <Value>373.2</Value>
      </Total>
    </HistoricalUsage>
    <HistoricalUsage>
      <Month>4</Month>
      <Year>2011</Year>
      <Billable>
        <Unit>Mbps</Unit>
        <Value>3</Value>
      </Billable>
      <Burst>
```

```
        <Unit>Mbps</Unit>
        <Value>1.3</Value>
      </Burst>
      <Total>
        <Unit>GB</Unit>
        <Value>176.5</Value>
      </Total>
    </HistoricalUsage>
  </HistoricalUsages>
</BandwidthUsage>
```

Return to *7.38 Bandwidth*.

Return to *7 Application Programming Interface Reference Guide*.

7.39 Alert

7.39.1 Get Alerts Notifications 1090
7.39.2 Get Alerts Rules 1096
7.39.3 Get Alerts Rules by ID 1101
7.39.4 Get Alerts Rule Templates 1103
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7.39.9 Action Alerts Create Rule 1125
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Advance to *7.40 SSH Key*.

Alerts signify specific events in the operational environment. Available events are defined by the Enterprise Cloud and are currently High Processor Usage, High Memory Usage, Processor Bursting, and Memory Bursting.

Alerts are defined by a threshold: a unit, a value, and a comparison operator. Agents read the measured value, perform the comparison, and if the comparison is true, an alert is created. For example, the threshold for High Processor Usage is defined as a unit ofpercent , a value of 67, and a comparison operator of greater-than-or-equal-to. A reading of processor usage is ataken and if the measured value is greater than or equal to 67% an alert is created.

Return to *7 Application Programming Interface Reference Guide*.

7.39.1 Get Alerts Notifications

The Get Alerts Notifications call returns information regarding the alert notifications for a specified organization.

Request

```
GET http://{Terremark URI}/admin/alertNotifications/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/alertNotifications/organizations/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.alertNotification
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertNotification href="/admin/alertNotifications/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.alertNotification"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/alertRuleTemplates/" type="application/vnd.tmrk.cloud.alertRuleTemplate;
      type=collection" rel="down"/>

  </Links>

  <AlertRules href="/cloudapi/spec/admin/alertrules/organizations/{organization identifier}"
    type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">

    <AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
      type="application/vnd.tmrk.cloud.admin.alertRule">

      <Links>

        <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

        <Link href="/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>

      </Links>

      <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
        template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

      <RuleGroup>{rule group name}</RuleGroup>
```

```
      <Threshold>
        <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
        <Value>{threshold value}</Value>
        <CompareType>{comparison operator}</CompareType>
      </Threshold>
      <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
      <Configuration>
        <EmailConfiguration>
          <Recipients>
            <Recipient>
              <Name>{recipient name}</Name>
              <Email>{user email local part}@{user email domain part}</Email>
            </Recipient>
              ⋮
          </Recipients>
        </EmailConfiguration>
      </Configuration>
    </AlertRule>
  </AlertRules>
    ⋮
</AlertNotification>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 5281
  Content-Type: application/vnd.tmrk.cloud.admin.alertNotification
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 29 Feb 2012 18:56:35 GMT

<AlertNotification href="/cloudapi/spec/admin/alertnotifications/organizations/2"
  type="application/vnd.tmrk.cloud.admin.alertNotification"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/cloudapi/spec/alertruletemplates/"
      type="application/vnd.tmrk.cloud.alertRuleTemplate; type=collection" rel="down"/>

  </Links>

  <AlertRules href="/cloudapi/spec/admin/alertrules/organizations/2"
```

```
type="application/vnd.tmrk.cloud.admin.alertRule; type=collection">
<AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
 type="application/vnd.tmrk.cloud.admin.alertRule">
 <Links>
  <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>
 </Links>
 <Actions>
  <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
   type="application/vnd.tmrk.cloud.admin.alertRule"/>
  <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>
 </Actions>
 <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
  type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
 <RuleGroup>Resources</RuleGroup>
 <Threshold>
  <Unit>Percent</Unit>
  <Value>50</Value>
  <CompareType>&gt;=</CompareType>
 </Threshold>
 <RuleAction>NotifyByEmail</RuleAction>
 <Configuration>
  <EmailConfiguration>
   <Recipients>
    <Recipient>
     <Name>Homer Simpson</Name>
     <Email>homer.simpson@gmail.com</Email>
    </Recipient>
    <Recipient>
     <Name>Bart Simpson</Name>
     <Email>bart.simpson@gmail.com</Email>
    </Recipient>
   </Recipients>
  </EmailConfiguration>
 </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/2" name="High Processor Usage"
```

```
    type="application/vnd.tmrk.cloud.admin.alertRule">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/2" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/2" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/3" name="High Processor Usage"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
      <Value>67</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
  <AlertRule href="/cloudapi/spec/admin/alertrules/3" name="Processor Bursting"
    type="application/vnd.tmrk.cloud.admin.alertRule">
    <Links>
```

```
    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
     type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
     type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/alertrules/3" name="edit"
     type="application/vnd.tmrk.cloud.admin.alertRule"/>

    <Action href="/cloudapi/spec/admin/alertrules/3" name="remove"/>

  </Actions>

  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/6" name="Processor Bursting"
   type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

  <RuleGroup>Resources</RuleGroup>

  <Threshold>

    <Unit>Bursting/Not Bursting</Unit>

    <Value>1</Value>

    <CompareType>=</CompareType>

  </Threshold>

  <RuleAction>NotifyByEmail</RuleAction>

  <Configuration>

    <EmailConfiguration>

      <Recipients>

        <Recipient>

          <Name>Homer Simpson</Name>

          <Email>homer.simpson@gmail.com</Email>

        </Recipient>

        <Recipient>

          <Name>Bart Simpson</Name>

          <Email>bart.simpson@gmail.com</Email>

        </Recipient>

      </Recipients>

    </EmailConfiguration>

  </Configuration>

</AlertRule>

<AlertRule href="/cloudapi/spec/admin/alertrules/4" name="Memory Bursting"
 type="application/vnd.tmrk.cloud.admin.alertRule">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
     type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
```

```
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/4" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/4" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/5" name="Memory Bursting"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Bursting/Not Bursting</Unit>
      <Value>1</Value>
      <CompareType>=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
</AlertRules>
</AlertNotification>
```


Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.2 Get Alerts Rules

The Get Alerts Rules call returns information regarding the alert rule in an organization.

Request

```
GET http://{Terremark URI}/admin/alertRules/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/alertRules/organizations/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertRules href="/admin/alertRules/organizations/{organization identifier}"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
    type="application/vnd.tmrk.cloud.admin.alertRule">

    <Links>

      <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/organizations/{organization identifier}" name="{organization name}"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
      template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

    <RuleGroup>{rule group name}</RuleGroup>

    <Threshold>

      <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>

      <Value>{threshold value}</Value>

      <CompareType>{comparison operator}</CompareType>

    </Threshold>

    <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>

    <Configuration>

      <EmailConfiguration>

        <Recipients>

          <Recipient>

            <Name>{recipient name}</Name>
```

```
          <Email>{user email local part}@{user email domain part}</Email>
        </Recipient>
          ⋮
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
  ⋮
</AlertRules>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 4719
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule; type=collection
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 29 Feb 2012 19:17:48 GMT

<AlertRules href="/cloudapi/spec/admin/alertrules/organizations/2"
  type="application/vnd.tmrk.cloud.admin.alertRule; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
    type="application/vnd.tmrk.cloud.admin.alertRule">

    <Links>

      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>

    </Links>

    <Actions>

      <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>

      <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>

    </Actions>

    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

    <RuleGroup>Resources</RuleGroup>

    <Threshold>

      <Unit>Percent</Unit>

      <Value>50</Value>

      <CompareType>&gt;=</CompareType>

    </Threshold>

    <RuleAction>NotifyByEmail</RuleAction>
```

```
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
  <AlertRule href="/cloudapi/spec/admin/alertrules/2" name="High Processor Usage"
    type="application/vnd.tmrk.cloud.admin.alertRule">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/2" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/2" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/3" name="High Processor Usage"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
      <Value>67</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
```

```
      <Recipients>
        <Recipient>
          <Name>Homer Simpson</Name>
          <Email>homer.simpson@gmail.com</Email>
        </Recipient>
        <Recipient>
          <Name>Bart Simpson</Name>
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/3" name="Processor Bursting"
  type="application/vnd.tmrk.cloud.admin.alertRule">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/alertrules/3" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>
    <Action href="/cloudapi/spec/admin/alertrules/3" name="remove"/>
  </Actions>
  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/6" name="Processor Bursting"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
    <Unit>Bursting/Not Bursting</Unit>
    <Value>1</Value>
    <CompareType>=</CompareType>
  </Threshold>
  <RuleAction>NotifyByEmail</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
```

```
        <Name>Homer Simpson</Name>
        <Email>homer.simpson@gmail.com</Email>
      </Recipient>
      <Recipient>
        <Name>Bart Simpson</Name>
        <Email>bart.simpson@gmail.com</Email>
      </Recipient>
    </Recipients>
  </EmailConfiguration>
</Configuration>
</AlertRule>
<AlertRule href="/cloudapi/spec/admin/alertrules/4" name="Memory Bursting"
 type="application/vnd.tmrk.cloud.admin.alertRule">
 <Links>
  <Link href="/cloudapi/spec/admin/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  <Link href="/cloudapi/spec/organizations/2" name="Organization 2"
   type="application/vnd.tmrk.cloud.organization" rel="up"/>
 </Links>
 <Actions>
  <Action href="/cloudapi/spec/admin/alertrules/4" name="edit"
   type="application/vnd.tmrk.cloud.admin.alertRule"/>
  <Action href="/cloudapi/spec/admin/alertrules/4" name="remove"/>
 </Actions>
 <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/5" name="Memory Bursting"
  type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
 <RuleGroup>Resources</RuleGroup>
 <Threshold>
  <Unit>Bursting/Not Bursting</Unit>
  <Value>1</Value>
  <CompareType>=</CompareType>
 </Threshold>
 <RuleAction>NotifyByEmail</RuleAction>
 <Configuration>
  <EmailConfiguration>
   <Recipients>
    <Recipient>
     <Name>Homer Simpson</Name>
     <Email>homer.simpson@gmail.com</Email>
```

```
        </Recipient>
        <Recipient>
          <Name>Bart Simpson</Name>
          <Email>bart.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
  </Configuration>
 </AlertRule>
</AlertRules>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.3 Get Alerts Rules by ID

The Get Alerts Rules call returns information regarding the specified alert rule.

Request

```
GET http://{Terremark URI}/admin/alertRules/{alert rule identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/alertRules/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
  type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
```

```
    template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>{rule group name}</RuleGroup>
  <Threshold>
    <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
    <Value>{threshold value}</Value>
    <CompareType>{comparison operator}</CompareType>
  </Threshold>
  <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
          <Name>{recipient name}</Name>
          <Email>{user email local part}@{user email domain part}</Email>
        </Recipient>
          ⋮
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1224
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 29 Feb 2012 19:22:37 GMT

<AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
  type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>
    <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>
```

```
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
     type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
      <Value>50</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>homer.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Bart Simpson</Name>
            <Email>bart.simpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.4 Get Alerts Rule Templates

The Get Alerts Rule Templates call returns information regarding the alert rule templates.

Note: This call should have a solidus (forward slash, "/") at the end of the call.

Request

```
GET http://{Terremark URI}/alertRuleTemplates/
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/alertRuleTemplates/
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud. alertRuleTemplate; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertRuleTemplates href="/alertRuleTemplates/" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
    template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate">

    <Actions>

      <Action href="/admin/alertRules/alertRuleTemplates/{alert rule template
        identifier}/action/createAlertRule" name="createAlertRule"
        type="application/vnd.tmrk.cloud.admin.createAlertRule"/>

    </Actions>

    <RuleGroup>{rule group name}</RuleGroup>

    <Description>{textual description}</Description>

    <Threshold>

      <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>

      <Value>{threshold value}</Value>

      <CompareType>{comparison operator}</CompareType>

    </Threshold>

  </AlertRuleTemplate>

    ⋮

</AlertRuleTemplates>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 2206
  Content-Type: application/vnd.tmrk.cloud.alertRuleTemplate; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 27 Feb 2012 16:22:45 GMT

<AlertRuleTemplates href="/alertruletemplates/" type="application/vnd.tmrk.cloud.alertRuleTemplate;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <AlertRuleTemplate href="/alertruletemplates/3" name="High Processor Usage"
    type="application/vnd.tmrk.cloud.alertRuleTemplate">

    <Actions>

      <Action href="/admin/alertrules/alertruletemplates/3/action/createalertrule"
        name="createAlertRule" type="application/vnd.tmrk.cloud.admin.createAlertRule"/>

    </Actions>
```

```
    <Description>CPU for a compute pool exceeds a percent limit.</Description>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
      <Value>67</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
  </AlertRuleTemplate>
  <AlertRuleTemplate href="/alertruletemplates/4" name="High Memory Usage"
    type="application/vnd.tmrk.cloud.alertRuleTemplate">
    <Actions>
      <Action href="/admin/alertrules/alertruletemplates/4/action/createalertrule"
        name="createAlertRule" type="application/vnd.tmrk.cloud.admin.createAlertRule"/>
    </Actions>
    <Description>Memory for a compute pool exceeds a percent limit.</Description>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
      <Value>50</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
  </AlertRuleTemplate>
  <AlertRuleTemplate href="/alertruletemplates/5" name="Memory Bursting"
    type="application/vnd.tmrk.cloud.alertRuleTemplate">
    <Actions>
      <Action href="/admin/alertrules/alertruletemplates/5/action/createalertrule"
        name="createAlertRule" type="application/vnd.tmrk.cloud.admin.createAlertRule"/>
    </Actions>
    <Description>Memory for a compute pool is bursting.</Description>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Bursting/Not Bursting</Unit>
      <Value>1</Value>
      <CompareType>=</CompareType>
    </Threshold>
  </AlertRuleTemplate>
  <AlertRuleTemplate href="/alertruletemplates/6" name="Processor Bursting"
    type="application/vnd.tmrk.cloud.alertRuleTemplate">
    <Actions>
```

```
      <Action href="/admin/alertrules/alertruletemplates/6/action/createalertrule"
        name="createAlertRule" type="application/vnd.tmrk.cloud.admin.createAlertRule"
        actionDisabled="disabled"/>
    </Actions>
    <Description>CPU for a compute pool is bursting.</Description>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Bursting/Not Bursting</Unit>
      <Value>1</Value>
      <CompareType>=</CompareType>
    </Threshold>
  </AlertRuleTemplate>
</AlertRuleTemplates>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.5 Get Alerts Rule Templates by ID

The Get Alerts Rule Templates by ID call returns information regarding the specified alert rule template.

Request

```
GET http://{Terremark URI}/alertRuleTemplates/{alert rule template identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/alertRuleTemplates/4
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.alertRuleTemplate
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
  template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <RuleGroup>{rule group name}</RuleGroup>
  <Threshold>
    <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
    <Value>{threshold value}</Value>
```

```
    <CompareType>{comparison operator}</CompareType>
  </Threshold>
</AlertRuleTemplate>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 303
  Content-Type: application/vnd.tmrk.cloud.alertRuleTemplate
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 23 Jan 2012 19:42:58 GMT
<AlertRuleTemplate href="/alertRuleTemplates/4" name="High Memory Usage"
  type="application/vnd.tmrk.cloud.alertRuleTemplate" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <RuleGroup>Resources</RuleGroup>
  <Threshold>
    <Unit>Percent</Unit>
    <Value>50</Value>
    <CompareType>&gt;=</CompareType>
  </Threshold>
</AlertRuleTemplate>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.6 Get Alerts Log

The Get Alerts Log call returns information regarding the alert issues and alarms for an organization. Alert issues pass a threshold and may persist for a period of time, resulting in multiple readings. Alert alarms are single occurrences.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

<PageCount> is the <TotalCount> divided by the pageSize parameter, or 20 if pagesize is not specified, lifted to the higher whole number if not evenly divisible.

The call may include optional query parameters. Separate query parameters from the call with a question mark (`?`) and separate parameters from each other with an ampersand (`&`). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = page 1
pageSize	Number of items returned per page between 1 and 1000; default = 20

Parameter	Usage
startDate	Enter in ISO8601 format; time is always start of day and if entered is ignored; default = earliest record
endDate	Enter in ISO8601 format; time is always end of day and if entered is ignored; default = latest record
direction	asc ascending desc descending default = descending
sortBy	The permitted sort key is `Date` and uses the value of <StartTime>
environmentId	Environment identifier for the desired environment; default = all environments
entityType	Entity on which to filter: • computePool • datacenter
entityId	Identifier of the desired entity in entityType

Alert issues may persist for substantial time. Using either `startDate`, `endDate`, or both selects records in which the <StartTime> is less than the `endDate` valueand the <EndTime> is greater than the `startDate` value. This presents all alert issues open within the selected time period.

Request

```
GET http://{Terremark URI}/alerts/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/alerts/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.alert
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertLog href="/alerts/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.alertLog" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/alerts/organizations/{organization identifier}?page={page number}&amp;pagesize={page
      size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
```

```
      rel="first"/>
    <Link href="/alerts/organizations/{organization identifier}?page={page number}&amp;pagesize={page
      size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
      rel="previous"/>
    <Link href="/alerts/organizations/{organization identifier}?page={page number}&amp;pagesize={page
      size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
      rel="next"/>
    <Link href="/alerts/organizations/{organization identifier}?page={page number}&amp;pagesize={page
      size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
      rel="last"/>
  </Links>
  <Alert href="/alerts/{alert identifier}" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/{alert identifier}/events" type="application/vnd.tmrk.cloud.alertEvent;
        type=collection" rel="down"/>
      <Link href="/alerts/organizations/{organization identifier}"
        type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/{alert rule template identifier}"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/{environment identifier}" name="{environment name}"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>{duration in minutes}</DurationInMinutes>
    <StartTime>{start time}</StartTime>
    <EndTime>{end time}</EndTime>
    <Status>{Open | Closed | OneTime}</Status>
    <AlertType>{None | Alarm | Incident}</AlertType>
  </Alert>
    ⋮
  <TotalCount>{total count of alerts}</TotalCount>
  <PageCount>{page count}</PageCount>
  <CurrentPage>{current page}</CurrentPage>
</AlertLog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 15434
  Content-Type: application/vnd.tmrk.cloud.alertLog
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Feb 2012 19:17:53 GMT
<AlertLog href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
```

```
<Links>
  <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
    rel="up"/>
  <Link href="/admin/organizations/1" name="Organization 1"
    type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
  <Link href="/alerts/organizations/1?page=2&amp;pagesize=20"
    type="application/vnd.tmrk.cloud.alertLog" rel="next"/>
  <Link href="/alerts/organizations/1?page=110&amp;pagesize=20"
    type="application/vnd.tmrk.cloud.alertLog" rel="last"/>
</Links>
<Alert href="/alerts/2188" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2188/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>17</DurationInMinutes>
  <StartTime>2012-02-15T19:00:00Z</StartTime>
  <Status>Open</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2187" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2187/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>47</DurationInMinutes>
  <StartTime>2012-02-15T18:30:00Z</StartTime>
  <Status>Open</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2186" type="application/vnd.tmrk.cloud.alert">
```

```
    <Links>
      <Link href="/alerts/2186/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>77</DurationInMinutes>
    <StartTime>2012-02-15T18:00:00Z</StartTime>
    <Status>Open</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2185" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2185/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>15</DurationInMinutes>
    <StartTime>2012-02-15T17:30:00Z</StartTime>
    <EndTime>2012-02-15T17:45:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2184" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2184/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
```

```
    <DurationInMinutes>25</DurationInMinutes>
    <StartTime>2012-02-15T17:00:00Z</StartTime>
    <EndTime>2012-02-15T17:25:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2183" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2183/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>15</DurationInMinutes>
    <StartTime>2012-02-15T16:30:00Z</StartTime>
    <EndTime>2012-02-15T16:45:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2182" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2182/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>15</DurationInMinutes>
    <StartTime>2012-02-15T16:00:00Z</StartTime>
    <EndTime>2012-02-15T16:15:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2181" type="application/vnd.tmrk.cloud.alert">
```

```
    <Links>
      <Link href="/alerts/2181/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>25</DurationInMinutes>
    <StartTime>2012-02-15T15:30:00Z</StartTime>
    <EndTime>2012-02-15T15:55:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2180" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2180/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>15</DurationInMinutes>
    <StartTime>2012-02-15T15:00:00Z</StartTime>
    <EndTime>2012-02-15T15:15:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <Alert href="/alerts/2179" type="application/vnd.tmrk.cloud.alert">
    <Links>
      <Link href="/alerts/2179/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
```

```
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>15</DurationInMinutes>
  <StartTime>2012-02-15T14:30:00Z</StartTime>
  <EndTime>2012-02-15T14:45:00Z</EndTime>
  <Status>Closed</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2178" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2178/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>25</DurationInMinutes>
  <StartTime>2012-02-15T14:00:00Z</StartTime>
  <EndTime>2012-02-15T14:25:00Z</EndTime>
  <Status>Closed</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2177" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2177/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>15</DurationInMinutes>
  <StartTime>2012-02-15T13:30:00Z</StartTime>
  <EndTime>2012-02-15T13:45:00Z</EndTime>
  <Status>Closed</Status>
  <AlertType>Incident</AlertType>
</Alert>
```

```
<Alert href="/alerts/2176" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2176/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>45</DurationInMinutes>
  <StartTime>2012-02-15T13:00:00Z</StartTime>
  <EndTime>2012-02-15T13:45:00Z</EndTime>
  <Status>Closed</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2175" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2175/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <AlertSource href="/environments/1" name="Environment 1"
    type="application/vnd.tmrk.cloud.environment"/>
  <DurationInMinutes>25</DurationInMinutes>
  <StartTime>2012-02-15T12:30:00Z</StartTime>
  <EndTime>2012-02-15T12:55:00Z</EndTime>
  <Status>Closed</Status>
  <AlertType>Incident</AlertType>
</Alert>
<Alert href="/alerts/2174" type="application/vnd.tmrk.cloud.alert">
  <Links>
    <Link href="/alerts/2174/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
      rel="down"/>
    <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertruletemplates/1"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
```

```
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>

    <DurationInMinutes>15</DurationInMinutes>

    <StartTime>2012-02-15T12:00:00Z</StartTime>

    <EndTime>2012-02-15T12:15:00Z</EndTime>

    <Status>Closed</Status>

    <AlertType>Incident</AlertType>

  </Alert>

  <Alert href="/alerts/2173" type="application/vnd.tmrk.cloud.alert">

    <Links>

      <Link href="/alerts/2173/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>

      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>

    </Links>

    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>

    <DurationInMinutes>15</DurationInMinutes>

    <StartTime>2012-02-15T11:30:00Z</StartTime>

    <EndTime>2012-02-15T11:45:00Z</EndTime>

    <Status>Closed</Status>

    <AlertType>Incident</AlertType>

  </Alert>

  <Alert href="/alerts/2172" type="application/vnd.tmrk.cloud.alert">

    <Links>

      <Link href="/alerts/2172/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
        rel="down"/>

      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>

    </Links>

    <AlertRuleTemplate href="/alertruletemplates/1"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>

    <DurationInMinutes>25</DurationInMinutes>

    <StartTime>2012-02-15T11:00:00Z</StartTime>

    <EndTime>2012-02-15T11:25:00Z</EndTime>

    <Status>Closed</Status>

    <AlertType>Incident</AlertType>
```

```
    </Alert>
    <Alert href="/alerts/2171" type="application/vnd.tmrk.cloud.alert">
      <Links>
        <Link href="/alerts/2171/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
          rel="down"/>
        <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
      </Links>
      <AlertRuleTemplate href="/alertruletemplates/1"
        type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
      <AlertSource href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>
      <DurationInMinutes>15</DurationInMinutes>
      <StartTime>2012-02-15T10:30:00Z</StartTime>
      <EndTime>2012-02-15T10:45:00Z</EndTime>
      <Status>Closed</Status>
      <AlertType>Incident</AlertType>
    </Alert>
    <Alert href="/alerts/2170" type="application/vnd.tmrk.cloud.alert">
      <Links>
        <Link href="/alerts/2170/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
          rel="down"/>
        <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
      </Links>
      <AlertRuleTemplate href="/alertruletemplates/1"
        type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
      <AlertSource href="/environments/1" name="Environment 1"
        type="application/vnd.tmrk.cloud.environment"/>
      <DurationInMinutes>15</DurationInMinutes>
      <StartTime>2012-02-15T10:00:00Z</StartTime>
      <EndTime>2012-02-15T10:15:00Z</EndTime>
      <Status>Closed</Status>
      <AlertType>Incident</AlertType>
    </Alert>
    <Alert href="/alerts/2169" type="application/vnd.tmrk.cloud.alert">
      <Links>
        <Link href="/alerts/2169/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
          rel="down"/>
        <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
      </Links>
      <AlertRuleTemplate href="/alertruletemplates/1"
```

```
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
      type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>25</DurationInMinutes>
    <StartTime>2012-02-15T09:30:00Z</StartTime>
    <EndTime>2012-02-15T09:55:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
  <TotalCount>2188</TotalCount>
  <PageCount>110</PageCount>
  <CurrentPage>1</CurrentPage>
</AlertLog>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.7 Get Alerts Log by ID

The Get Alerts Log by ID call returns information regarding the specified alert issue or alarm. Alert issues pass a threshold and may persist for a period of time, resulting in multiple readings. Alert alarms are single occurrences.

Request

```
GET http://{Terremark URI}/alerts/{alert identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/alerts/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.alert
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<Alert href="/alerts/{alert identifier}" type="application/vnd.tmrk.cloud.alert"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/alerts/{alert identifier}/events" type="application/vnd.tmrk.cloud.alertEvent;
      type=collection" rel="down"/>
    <Link href="/alerts/organizations/{organization identifier}"
```

```
      type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/{alert rule template identifier}"
     type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/{environment identifier}" name="{environment name}"
     type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>{duration in minutes}</DurationInMinutes>
    <StartTime>{start time}</StartTime>
    <EndTime>{end time}</EndTime>
    <Status>{Open | Closed | OneTime}</Status>
    <AlertType>{None | Alarm | Incident}</AlertType>
  </Alert>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 785
    Content-Type: application/vnd.tmrk.cloud.alert
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 15 Feb 2012 19:41:18 GMT
  <Alert href="/alerts/1" type="application/vnd.tmrk.cloud.alert"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/alerts/1/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
       rel="down"/>
      <Link href="/alerts/organizations/1" type="application/vnd.tmrk.cloud.alertLog" rel="up"/>
    </Links>
    <AlertRuleTemplate href="/alertruletemplates/1"
     type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <AlertSource href="/environments/1" name="Environment 1"
     type="application/vnd.tmrk.cloud.environment"/>
    <DurationInMinutes>15</DurationInMinutes>
    <StartTime>2012-01-01T05:30:00Z</StartTime>
    <EndTime>2012-01-01T05:45:00Z</EndTime>
    <Status>Closed</Status>
    <AlertType>Incident</AlertType>
  </Alert>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.8 Get Alerts Log Events

The Get Alerts Log Events call returns information regarding the alert readings for a specified alert issue or alert alarm. Alert issues, because they have a duration, will typically have multiple readings. Alert alarms, because they are a single occurrence, will have only the reading that triggered the alarm.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

<PageCount> is the <TotalCount> divided by the pageSize parameter, or 20 if pagesize is not specified, lifted to the higher whole number if not evenly divisible.

The call may include optional query parameters. Separate query parameters from the call with a question mark (`?`) and separate parameters from each other with an ampersand (`&`). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = page 1
pageSize	Number of items returned per page between 1 and 1000; default = 20
startDate	Enter in ISO8601 format; time is always start of day and if entered is ignored; default = earliest record
endDate	Enter in ISO8601 format; time is always end of day and if entered is ignored; default = latest record
direction	asc ascending desc descending default = descending
sortBy	The permitted sort key is `Date`

Request

```
GET http://{Terremark URI}/alerts/{alert identifier}/events
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/alerts/1/events
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.alert
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertEvents href="/alerts/{alert identifier}/events" type="application/vnd.tmrk.cloud.alertEvent;
```

```
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/alerts/1" type="application/vnd.tmrk.cloud.alert" rel="up"/>
      <Link href="/alerts/{alert identifier}/events?page={page number}&amp;pagesize={page
        size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
        rel="first"/>
      <Link href/alerts/{alert identifier}/events?page={page number}&amp;pagesize={page
        size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
        rel="previous"/>
      <Link href/alerts/{alert identifier}/events?page={page number}&amp;pagesize={page
        size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
        rel="next"/>
      <Link href/alerts/{alert identifier}/events?page={page number}&amp;pagesize={page
        size}&amp;sortBy=Date&amp;direction={asc | desc}" type="application/vnd.tmrk.cloud.alertLog"
        rel="last"/>
    </Links>
    <AlertEvent>
      <Reading>
        <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
        <Value>{reading}</Value>
      </Reading>
      <Date>{time of reading}</Date>
      <EventType>{None | Alarm | StartIncident | InIncident | EndIncident}</EventType>
    </AlertEvent>
      ⋮
    <TotalCount>{total count of alerts}</TotalCount>
    <PageCount>{page count}</PageCount>
    <CurrentPage>{current page}</CurrentPage>
  </AlertEvents>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 2479
    Content-Type: application/vnd.tmrk.cloud.alertEvent; type=collection
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 15 Feb 2012 21:12:25 GMT
  <AlertEvents href="/alerts/1/events" type="application/vnd.tmrk.cloud.alertEvent; type=collection"
    xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/alerts/1" type="application/vnd.tmrk.cloud.alert" rel="up"/>
    </Links>
```

```
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>79</Value>
      </Reading>
      <Date>2012-01-01T05:44:00Z</Date>
      <EventType>EndIncident</EventType>
    </AlertEvent>
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>74</Value>
      </Reading>
      <Date>2012-01-01T05:43:00Z</Date>
      <EventType>InIncident</EventType>
    </AlertEvent>
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>73</Value>
      </Reading>
      <Date>2012-01-01T05:42:00Z</Date>
      <EventType>InIncident</EventType>
    </AlertEvent>
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>74</Value>
      </Reading>
      <Date>2012-01-01T05:41:00Z</Date>
      <EventType>InIncident</EventType>
    </AlertEvent>
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>55</Value>
      </Reading>
```

```
    <Date>2012-01-01T05:40:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>91</Value>
    </Reading>
    <Date>2012-01-01T05:39:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>68</Value>
    </Reading>
    <Date>2012-01-01T05:38:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>67</Value>
    </Reading>
    <Date>2012-01-01T05:37:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>69</Value>
    </Reading>
    <Date>2012-01-01T05:36:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
```

```
      <Unit>Percent</Unit>
      <Value>71</Value>
    </Reading>
    <Date>2012-01-01T05:35:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>97</Value>
    </Reading>
    <Date>2012-01-01T05:34:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>86</Value>
    </Reading>
    <Date>2012-01-01T05:33:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>81</Value>
    </Reading>
    <Date>2012-01-01T05:32:00Z</Date>
    <EventType>InIncident</EventType>
  </AlertEvent>
  <AlertEvent>
    <Reading>
      <Unit>Percent</Unit>
      <Value>71</Value>
    </Reading>
    <Date>2012-01-01T05:31:00Z</Date>
    <EventType>InIncident</EventType>
```

```
    </AlertEvent>
    <AlertEvent>
      <Reading>
        <Unit>Percent</Unit>
        <Value>71</Value>
      </Reading>
      <Date>2012-01-01T05:30:00Z</Date>
      <EventType>StartIncident</EventType>
    </AlertEvent>
    <TotalCount>15</TotalCount>
    <PageCount>1</PageCount>
    <CurrentPage>1</CurrentPage>
  </AlertEvents>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.9 Action Alerts Create Rule

The Action Alerts Create Rule call creates an alert rule from the specified alert rule template in an organization. If successful, the call returns information regarding the alert rule that was created.

At least one <Recipient> is required.

Recipient <Email> must be unique. If duplicate email addresses exist, the first recipient with that email address is retained and subsequent recipients with that email address are silently dropped.

Request

```
POST http://{Terremark URI}/admin/alertrules/alertruletemplates/{alert rule template
  identifier}/action/createAlertRule
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/alertRules/alertRuletemplates/3/ …
  action/createAlertRule
```

Body

```
<Configuration>
  <EmailConfiguration>
    <Recipients>
      <Recipient> <!-- At lease one required -->
        <Name>{recipient name}</Name> <!-- Optional -->
        <Email>{user email local part}@{user email domain part}</Email> <!-- Required -->
```

```
      </Recipient>
        ⋮
    </Recipients>
  </EmailConfiguration>
</Configuration>
```

EXAMPLE

```
<Configuration>
  <EmailConfiguration>
    <Recipients>
      <Recipient>
        <Name>Homer Simpson</Name>
        <Email>hsimpson@gmail.com</Email>
      </Recipient>
    </Recipients>
  </EmailConfiguration>
</Configuration>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
  type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
    template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

  <RuleGroup>{rule group name}</RuleGroup>

  <Threshold>

    <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>

    <Value>{threshold value}</Value>

    <CompareType>{comparison operator}</CompareType>
```

```
    </Threshold>
    <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>{recipient name}</Name>
            <Email>{user email local part}@{user email domain part}</Email>
          </Recipient>
            ⋮
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
```

EXAMPLE

```
  HTTP/1.1 201 Created
    Content-Length: 1146
    Content-Type: application/vnd.tmrk.cloud.admin.alertRule
    Location: /cloudapi/spec/admin/alertrules/101
    x-tmrk-currentuser: /cloudapi/spec/admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Wed, 29 Feb 2012 20:16:21 GMT
  <AlertRule href="/cloudapi/spec/admin/alertrules/101" name="High Processor Usage"
    type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
    instance">
    <Links>
      <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/cloudapi/spec/admin/alertrules/101" name="edit"
        type="application/vnd.tmrk.cloud.admin.alertRule"/>
      <Action href="/cloudapi/spec/admin/alertrules/101" name="remove"/>
    </Actions>
    <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/3" name="High Processor Usage"
      type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
    <RuleGroup>Resources</RuleGroup>
    <Threshold>
      <Unit>Percent</Unit>
```

```
      <Value>67</Value>
      <CompareType>&gt;=</CompareType>
    </Threshold>
    <RuleAction>NotifyByEmail</RuleAction>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Homer Simpson</Name>
            <Email>hsimpson@gmail.com</Email>
          </Recipient>
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.10 Action Alerts Edit Rule

The Action Alerts Edit Rule call creates an alert rule from the specified alert rule template in an organization. If successful, the call returns information regarding the alert rule that was modified.

< AlertRuleTemplate>, < RuleGroup>, < Threshold>, and <RuleAction> are optional and ignored if present.

At least one <Recipient> is required.

Recipient <Email> must be unique. If duplicate email addresses exist, the first recipient with that email address is retained and subsequent recipients with that email address are silently dropped.

Note: If any <Recipient> is valued on the alert rule and not present in the call, that recipient is removed from the alert rule.

Request

```
PUT http://{Terremark URI}/admin/alertrules/{alert rule identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/alertRules/1
```

Body

```
<AlertRule>
```

```
    <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
     template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/> <!-- Optional, ignored if
     present -->
    <RuleGroup>{rule group name}</RuleGroup> <!-- Optional, ignored if present -->
    <Threshold> <!-- Optional, ignored if present -->
      <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
      <Value>{threshold value}</Value>
      <CompareType>{comparison operator}</CompareType>
    </Threshold>
    <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction> <!-- Optional, ignored if present
     -->
    <Configuration> <!-- Required -->
      <EmailConfiguration>
        <Recipients>
          <Recipient> <!-- At least one required -->
            <Name>{recipient name}</Name> <!-- Required -->
            <Email>{user email local part}@{user email domain part}</Email> <!-- Required -->
          </Recipient>
            ⋮
        </Recipients>
      </EmailConfiguration>
    </Configuration>
  </AlertRule>
```

EXAMPLE

```
  <AlertRule>
    <Configuration>
      <EmailConfiguration>
        <Recipients>
          <Recipient>
            <Name>Marge Simpson</Name>
            <Email>marge.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
            <Name>Lisa Simpson</Name>
            <Email>lisa.simpson@gmail.com</Email>
          </Recipient>
          <Recipient>
```

```
        <Name>Maggie Simpson</Name>
        <Email>maggie.simpson@gmail.com</Email>
      </Recipient>
    </Recipients>
  </EmailConfiguration>
</Configuration>
</AlertRule>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<AlertRule href="/admin/alertRules/{alert rule identifier}" name="{alert rule name}"
  type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <AlertRuleTemplate href="/alertRuleTemplates/{alert rule template identifier}" name="{alert rule
    template name}" type="application/vnd.tmrk.cloud.alertRuleTemplate"/>
  <RuleGroup>{rule group name}</RuleGroup>
  <Threshold>
    <Unit>{Percent | Bursting/Not Bursting | N/A}</Unit>
    <Value>{threshold value}</Value>
    <CompareType>{comparison operator}</CompareType>
  </Threshold>
  <RuleAction>{DoNotMonitor | LogOnly | NotifyByEmail}</RuleAction>
  <Configuration>
    <EmailConfiguration>
      <Recipients>
        <Recipient>
          <Name>{recipient name}</Name>
          <Email>{user email local part}@{user email domain part}</Email>
        </Recipient>
          ⋮
```

```
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1313
  Content-Type: application/vnd.tmrk.cloud.admin.alertRule
  x-tmrk-currentuser: /cloudapi/spec/admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 29 Feb 2012 20:28:52 GMT

<AlertRule href="/cloudapi/spec/admin/alertrules/1" name="High Memory Usage"
  type="application/vnd.tmrk.cloud.admin.alertRule" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/cloudapi/spec/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/cloudapi/spec/admin/alertrules/1" name="edit"
      type="application/vnd.tmrk.cloud.admin.alertRule"/>

    <Action href="/cloudapi/spec/admin/alertrules/1" name="remove"/>

  </Actions>

  <AlertRuleTemplate href="/cloudapi/spec/alertruletemplates/4" name="High Memory Usage"
    type="application/vnd.tmrk.cloud.alertRuleTemplate"/>

  <RuleGroup>Resources</RuleGroup>

  <Threshold>

    <Unit>Percent</Unit>

    <Value>50</Value>

    <CompareType>&gt;=</CompareType>

  </Threshold>

  <RuleAction>NotifyByEmail</RuleAction>

  <Configuration>

    <EmailConfiguration>

      <Recipients>

        <Recipient>

          <Name>Marge Simpson</Name>

          <Email>marge.simpson@gmail.com</Email>
```

```
        </Recipient>
        <Recipient>
          <Name>Lisa Simpson</Name>
          <Email>lisa.simpson@gmail.com</Email>
        </Recipient>
        <Recipient>
          <Name>Maggie Simpson</Name>
          <Email>maggie.simpson@gmail.com</Email>
        </Recipient>
      </Recipients>
    </EmailConfiguration>
  </Configuration>
</AlertRule>
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.39.11 Action Alerts Remove Rule

The Action Alerts Remove Rule call removes an alert rule from an organization. If successful, the call returns a 204 No Content header.

Request

```
DELETE http://{Terremark URI}/admin/alertrules/{alert rule identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/alertRules/1
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 02 Feb 2012 19:40:18 GMT
```

Return to *7.39 Alert*.

Return to *7 Application Programming Interface Reference Guide*.

7.40 SSH Key

7.40.1 Get SSH Keys 1133
7.40.2 Get SSH Keys by ID 1135
7.40.3 Action SSH Keys Create 1137
7.40.4 Action SSH Keys Edit 1139
7.40.5 Action SSH Keys Remove 1141

Advance to *7.41 Support Ticket*.

This section contains the calls for the SSH Key entity.

Return to *7 Application Programming Interface Reference Guide*.

7.40.1 Get SSH Keys

The Get SSH Keys call returns information regarding the SSH keys for an organization.

Request

```
GET http://{Terremark URI}/admin/sshKeys/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/sshKeys/organizations/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<SshKeys href="/admin/organizations/{organization identifier}/sshKeys"
  type="application/vnd.tmrk.cloud.admin.sshKey; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>
```

```
    <Actions>
      <Action href="/admin/sshKeys/organizations/{organization identifier}/action/createSshKey"
        name="createSshKey" type="application/vnd.tmrk.cloud.admin.sshKey"/>
    </Actions>
    <SshKey href="/admin/sshKeys/{SSH key identifier}" name="{SSH key name}"
      type="application/vnd.tmrk.cloud.admin.sshKey">
      <Links>
        <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
        <Link href="/organizations/{organization identifier}" name="{organization name}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/sshKeys/{SSH key identifier}" name="edit"
          type="application/vnd.tmrk.cloud.admin.sshKey"/>
        <Action href="/admin/sshKeys/{SSH key identifier}" name="remove" actionDisabled="{noAccess |
          disabled}"/>
      </Actions>
      <Default>{true | false}</Default>
      <FingerPrint>{SSH key fingerprint}</FingerPrint>
    </SshKey>
      ⋮
  </SshKeys>
```

EXAMPLE

```
  HTTP/1.1 200 OK
    Content-Length: 1956
    Content-Type: application/vnd.tmrk.cloud.admin.sshKey; type=collection
    x-tmrk-currentuser: /admin/users/101
    x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
    Date: Thu, 15 Sep 2011 13:08:07 GMT
  <SshKeys href="/admin/sshKeys/organizations/2" type="application/vnd.tmrk.cloud.admin.sshKey;
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/organizations/2" name="Organization 2"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/2" name="Organization 2" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/sshKeys/organizations/2/action/createSshKey" name="createSshKey"
        type="application/vnd.tmrk.cloud.admin.sshKey"/>
    </Actions>
```

```
    <SshKey href="/admin/sshKeys/1" name="Key 1" type="application/vnd.tmrk.cloud.admin.sshKey">
      <Links>
        <Link href="/admin/organizations/1" name="Org1"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
        <Link href="/organizations/1" name="Org1" type="application/vnd.tmrk.cloud.organization"
          rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/sshKeys/1" name="edit" type="application/vnd.tmrk.cloud.admin.sshKey"/>
        <Action href="/admin/sshKeys/1" name="remove" actionDisabled="disabled"/>
      </Actions>
      <Default>true</Default>
      <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
    </SshKey>
    <SshKey href="/admin/sshKeys/2" name="Key 2" type="application/vnd.tmrk.cloud.admin.sshKey">
      <Links>
        <Link href="/admin/organizations/1" name="Org1"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
        <Link href="/organizations/1" name="Org1" type="application/vnd.tmrk.cloud.organization"
          rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/sshKeys/2" name="edit" type="application/vnd.tmrk.cloud.admin.sshKey"/>
        <Action href="/admin/sshKeys/2" name="remove"/>
      </Actions>
      <Default>false</Default>
      <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
    </SshKey>
  </SshKeys>
```

Return to *7.40 SSH Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.40.2 Get SSH Keys by ID

The Get SSH Keys by ID call returns information regarding a specified SSH key for an organization.

Request

```
GET http://{Terremark URI}/admin/sshKeys/{SSH key identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/sshKeys/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<SshKey href="/admin/sshKeys/{SSH key identifier}" name="{SSH key name}"
  type="application/vnd.tmrk.cloud.admin.sshKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/sshKeys/{SSH key identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.sshKey"/>

    <Action href="/admin/sshKeys/{SSH key identifier}" name="remove" actionDisabled="{noAccess |
      disabled}"/>

  </Actions>

  <Default>{true | false}</Default>

  <FingerPrint>{SSH key fingerprint}</FingerPrint>

</SshKey>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 729
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Sep 2011 13:12:16 GMT

<SshKey href="/admin/sshKeys/1" name="Key 1" type="application/vnd.tmrk.cloud.admin.sshKey"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Org1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Org1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

  </Links>
```

```
    <Actions>
      <Action href="/admin/sshKeys/1" name="edit" type="application/vnd.tmrk.cloud.admin.sshKey"/>
      <Action href="/admin/sshKeys/1" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Default>true</Default>
    <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
  </SshKey>
```

Return to *7.40 SSH Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.40.3 Action SSH Keys Create

The Action SSH Keys Create call creates a new SSH key. If successful, the call returns information regarding the SSH key that was created.

The `name` attribute on <CreateSshKey … > is required.

Note: The `name` may not be that of another SSH key and may not exceed fifty characters.

<Default> is optional. If absent and this is the first key being created for an organization, it defaults to true, otherwise false.

<FingerPrint> is the SSH key fingerprint, which is a 16 byte hash of the private key.

<PrivateKey> is the actual private key, which has been encoded by bas64.

Request

```
  POST http://{Terremark URI}/admin/sshKeys/organizations/{organization identifier}/action/createSshKey
```

EXAMPLE

```
  POST http://services.enterprisecloud.terremark.com/admin/sshKeys/organizations/1/action/createSshKey
```

Body

```
  <CreateSshKey name="{SSH key name}"> <!-- Name is required -->
    <Default>{true | false}</Default> <!-- Optional -->
  </CreateSshKey>
```

EXAMPLE

```
  <CreateSshKey name="Key 12">
    <Default>false</Default>
  </CreateSshKey>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  Location: /admin/sshKeys/{SSH key identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<SshKey href="/admin/sshKeys/{SSH key identifier}" name="{SSH key name}"
  type="application/vnd.tmrk.cloud.admin.sshKey" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/sshKeys/{SSH key identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.sshKey"/>

    <Action href="/admin/sshKeys/{SSH key identifier}" name="remove"/>

  </Actions>

  <Default>{true | false}</Default>

  <FingerPrint>{hash of private key}</FingerPrint>

  <PrivateKey>{base64-encoded private key}</PrivateKey>

</SshKey>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 757
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  Location: /admin/sshKeys/3
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 15 Sep 2011 13:14:27 GMT

<SshKey href="/admin/sshKeys/3" name="Key 12" type="application/vnd.tmrk.cloud.admin.sshKey"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Org1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Org1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/sshKeys/3" name="edit" type="application/vnd.tmrk.cloud.admin.sshKey"/>
```

```
    <Action href="/admin/sshKeys/3" name="remove"/>
  </Actions>
  <Default>false</Default>
  <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
  <PrivateKey>MIICWwIBAAKBgQC6WwLqtE6V8PwuJeCQi40UMrYMUURasU4dGAfLXaRuhWVKlQXW
    aq4lUyiazxDjxgyM3vjMlFw3yy5UZOvBAYt0QEdhCYFZYoQZC2XHgPylpSpwb12e
    OtCBUvP7cfRU6gEzlN4ddWRn/aaRK0nxUpFzpy42PM9sM8Yv1shgokijnwICAQEC
    gYASIMKGZTZ2LlpGO3d2pvnNK8f/NLrx6Wc5nbsH1FC+DPnqXi9ijd0kgJ5YxXMz
    C0vt0/JZoNwlTYn8QZlsbLnkS1ITPvKvZI4PDV8nEG/BLEfnfL2guL17BUMmriOh
    nNC0uNQXtjOb+GFDMaF3p/lrDOKlJkH0P4WBVVvNX3VuOQJBANy8OTJtgvC2Dq5n
    lMfokPe0gec0/GNjAqyUBT2t5b3ZFnL1hFq9cZ1zfnKcCdb/MrFE/e/zpQqb2RSp
    ZB09fvsCQQDYILPpknl8lI5YpujSq7lCacvNgQSpvSeZPQIr4mJvdLJZtjS1I8d7
    VXRyy56JmHmaaOh749mR7KAXMdHENTytAkARLYbw/46sIhcOkYYZhKasrWy5Vszq
    2ONSKWcBz8YsqE1zh6awZmZ50zKuRerZ8f334YJUap5GjZ9WRvTda2KJAkA0+xE1
    RcYfiQYBz0QH0HIlMtZRQX6nHm5QZZ3q4dRlCK803vgAkzrcfYoeIfoJ0rM5xgsr
    UcDKHxxJa9bIgJlVAkEA1YrmZ3Sz7RGi9ZMqePuC+ffmLYVyonbZ7/292KPenDCK
    HhgxBKKGQ5mfqQNNKKO5vr/HT7Xmg0xbKwmkGaHttw==</PrivateKey>
</SshKey>
```


Return to *7.40 SSH Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.40.4 Action SSH Keys Edit

The Action SSH Keys Edit call edits the name of the SSH key. If successful, the call returns information regarding the SSH key that was modified.

The `name` attribute on <SshKey … > may be changed.

Note: The `name` may not be changed to that of another SSH key and may not exceed fifty characters.

<FingerPrint> is optional and ignored if present.

Note: The default SSH key may not be modified to <Default>false</Default>. Instead, modify the SSH key desired as the default to <Default>true</Default> and the existing default SSH key will be automatically modified to <Default>false</Default>.

Live Specification Test Values

Condition	Outcome
SSH key identifier = 1	Default key is true

Request

```
PUT http://{Terremark URI}/admin/sshKeys/{SSH key identifier}
```

EXAMPLE

```
PUT http://services.enterprisecloud.terremark.com/admin/sshKeys/2
```

Body

```
<SshKey name="{SSH key name}"> <!-- Name can be changed -->
  <Default>{true | false}</Default>
  <FingerPrint>{fingerprint}</FingerPrint> <!-- Optional, ignored if present -->
</SshKey>
```

EXAMPLE

```
<SshKey name="Key VM 1">
  <Default>false</Default>
  <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
</SshKey>
```

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<SshKey name="{SSH key name}" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/sshKeys/{SSH key identifier}" name="edit"
      type="application/vnd.tmrk.cloud.admin.sshKey"/>
    <Action href="/admin/sshKeys/{SSH key identifier}" name="remove"/>
  </Actions>
  <Default>{true | false}</Default>
  <FingerPrint>{fingerprint}</FingerPrint>
</SshKey>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 622
  Content-Type: application/vnd.tmrk.cloud.admin.sshKey
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
  Date: Thu, 15 Sep 2011 13:18:21 GMT
<SshKey name="Key VM 1" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/1" name="Org1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Org1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/sshKeys/2" name="edit" type="application/vnd.tmrk.cloud.admin.sshKey"/>
    <Action href="/admin/sshKeys/2" name="remove"/>
  </Actions>
  <Default>false</Default>
  <FingerPrint>fe:a6:f5:0f:57:95:f5:0d:6a:d0:38:65:47:f6:ac:65</FingerPrint>
</SshKey>
```

Return to *7.40 SSH Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.40.5 Action SSH Keys Remove

The Action SSH Keys Remove call removes a specified SSH key from an organization. If successful, the call returns a 204 No Content header.

Note: The default SSH key may not be removed. To remove it, make a different key the default, then remove it.

Request

```
DELETE http://{Terremark URI}/admin/sshKeys/{SSH key identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/sshKeys/2
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
Date: Thu, 09 Jun 2011 16:36:31 GMT
```

Return to *7.40 SSH Key*.

Return to *7 Application Programming Interface Reference Guide*.

7.41 Support Ticket

7.41.1 Get Support Tickets 1142

7.41.2 Get Support Tickets Active 1143

7.41.3 Get Support Tickets History 1145

7.41.4 Get Support Tickets by ID 1147

7.41.5 Action Support Tickets Create 1149

Advance to *7.42 Catalog*.

This section contains the calls for the Ticket List and Ticket entities.

Return to *7 Application Programming Interface Reference Guide*.

7.41.1 Get Support Tickets

The Get Support Tickets call returns references to obtain the open and closed support tickets for a specified organization.

Request

```
GET http://{Terremark URI}/admin/tickets/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/tickets/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.tickets
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<TicketGroups href="/admin/tickets/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.tickets" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
```

```
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/tickets/organizations/{organization identifier}/action/createTicket"
      name="createTicket" type="application/vnd.tmrk.cloud.createTicket"/>

  </Actions>

  <Active href="/admin/tickets/organizations/1/active" type="application/vnd.tmrk.cloud.admin.ticket;
    type=collection"/>

  <History href="/admin/tickets/organizations/1/history"
    type="application/vnd.tmrk.cloud.admin.ticket; type=collection"/>

</TicketGroups>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 695
  Content-Type: application/vnd.tmrk.cloud.admin.tickets
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 20 Oct 2011 23:13:45 GMT

<TicketGroups href="/admin/tickets/organizations/1" type="application/vnd.tmrk.cloud.admin.tickets"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/tickets/organizations/1/action/createTicket" name="createTicket"
      type="application/vnd.tmrk.cloud.createTicket"/>

  </Actions>

  <Active href="/admin/tickets/organizations/1/active" type="application/vnd.tmrk.cloud.admin.ticket;
    type=collection"/>

  <History href="/admin/tickets/organizations/1/history"
    type="application/vnd.tmrk.cloud.admin.ticket; type=collection"/>

</TicketGroups>
```

Return to *7.41 Support Ticket*.

Return to *7 Application Programming Interface Reference Guide*.

7.41.2 Get Support Tickets Active

The Get Support Tickets Active call returns active support tickets for a specified organization.

Request

```
GET http://{Terremark URI}/admin/tickets/organizations/{organization identifier}/active
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/tickets/organizations/1/active
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.ticket; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tickets href="/admin/tickets/organizations/{organization identifier}/active"
  type="application/vnd.tmrk.cloud.admin.ticket; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <TicketReference href="/admin/tickets/{ticket identifier}"
    type="application/vnd.tmrk.cloud.admin.ticket">

    <Id>{ticket identifier}</Id>

    <Date>{date}</Date>

    <Severity>{ticket severity}</Severity>

    <Status>{ticket status}</Status>

    <Device>{textual description}</Device>

    <Description>{textual description}</Description>

  </TicketReference>

    ⋮

</Tickets>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1222
  Content-Type: application/vnd.tmrk.cloud.admin.ticket; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 19 Oct 2011 20:04:36 GMT

<Tickets href="/admin/tickets/organizations/1/active" type="application/vnd.tmrk.cloud.admin.ticket;
```

```
    type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
    <Links>
      <Link href="/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
    </Links>
    <TicketReference href="/admin/tickets/3" type="application/vnd.tmrk.cloud.admin.ticket">
      <Id>3</Id>
      <Date>2011-10-19T19:59:36.5404964Z</Date>
      <Severity>D - Low</Severity>
      <Status>Escalated</Status>
      <Device>Blah Device</Device>
      <Description>Blah description</Description>
    </TicketReference>
    <TicketReference href="/admin/tickets/4" type="application/vnd.tmrk.cloud.admin.ticket">
      <Id>4</Id>
      <Date>2011-10-19T19:59:36.5404964Z</Date>
      <Severity>D - Low</Severity>
      <Status>Escalated</Status>
      <Device>Blah Device</Device>
      <Description>Blah description</Description>
    </TicketReference>
  </Tickets>
```

Return to *7.41 Support Ticket*.

Return to *7 Application Programming Interface Reference Guide*.

7.41.3 Get Support Tickets History

The Get Support Tickets History call returns support tickets closed within the preceding 90 days for a specified organization.

Request

```
GET http://{Terremark URI}/admin/tickets/organizations/{organization identifier}/history
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/tickets/organizations/1/history
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.ticket; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Tickets href="/admin/tickets/organizations/{organization identifier}/history"
  type="application/vnd.tmrk.cloud.admin.ticket; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <TicketReference href="/admin/tickets/{ticket identifier}"
    type="application/vnd.tmrk.cloud.admin.ticket">

    <Id>{ticket identifier}</Id>

    <Date>{date}</Date>

    <Severity>{ticket severity}</Severity>

    <Status>{ticket status}</Status>

    <Device>{textual description}</Device>

    <Description>{textual description}</Description>

  </TicketReference>

    ⋮

</Tickets>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1217
  Content-Type: application/vnd.tmrk.cloud.admin.ticket; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 19 Oct 2011 20:07:16 GMT

<Tickets href="/admin/tickets/organizations/1/history" type="application/vnd.tmrk.cloud.admin.ticket;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

  </Links>

  <TicketReference href="/admin/tickets/1" type="application/vnd.tmrk.cloud.admin.ticket">
```

```
    <Id>1</Id>
    <Date>2011-10-19T20:02:17.6478092Z</Date>
    <Severity>D - Low</Severity>
    <Status>Closed</Status>
    <Device>Blah Device</Device>
    <Description>Blah description</Description>
  </TicketReference>
  <TicketReference href="/admin/tickets/2" type="application/vnd.tmrk.cloud.admin.ticket">
    <Id>2</Id>
    <Date>2011-10-19T20:02:17.6478092Z</Date>
    <Severity>D - Low</Severity>
    <Status>Closed</Status>
    <Device>Blah Device</Device>
    <Description>Blah description</Description>
  </TicketReference>
</Tickets>
```

Return to *7.41 Support Ticket*.

Return to *7 Application Programming Interface Reference Guide*.

7.41.4 Get Support Tickets by ID

The Get Support Tickets by ID call returns a specified support ticket.

Request

```
GET http://{Terremark URI}/admin/tickets/{ticket identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/tickets/3
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.ticket
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Ticket href="/admin/tickets/{ticket identifier}" type="application/vnd.tmrk.cloud.admin.ticket"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>
```

```
    <Link href="/admin/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}" name="{organization name}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Id>{ticket identifier}</Id>

  <Date>{date}</Date>

  <Status>{ticket status}</Status>

  <Category>{ticket category}</Category>

  <DetectedBy>{user}</DetectedBy>

  <Severity>{ticket severity}</Severity>

  <Device>{textual description}</Device>

  <Classification>{ticket classification}</Classification>

  <Owner>{owner}</Owner>

  <Description>{textual description}</Description>

  <Information>{textual information}</Information>

  <Solution>{textual solution}</Solution>

  <History>

    <TicketHistoryItem>

      <Date>{note date}</Date>

      <Subject>{note subject}</Subject>

      <Information>{textual note}</Information>

    </TicketHistoryItem>

      ⋮

  </History>

</Ticket>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 807
  Content-Type: application/vnd.tmrk.cloud.admin.ticket
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Mon, 20 Jun 2011 23:34:05 GMT

<Ticket href="/admin/tickets/3" type="application/vnd.tmrk.cloud.admin.ticket"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>

    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
```

```
    </Links>
    <Id>3</Id>
    <Date>2011-06-20T23:29:06.6412063Z</Date>
    <Status>Closed</Status>
    <Category>Category 1</Category>
    <DetectedBy>ABCD</DetectedBy>
    <Severity>D - Low</Severity>
    <Device>Blah Device</Device>
    <Classification>Classification 1</Classification>
    <Owner>Test</Owner>
    <Description>Blah description</Description>
    <Information>Test Information</Information>
    <Solution>Test Solution</Solution>
    <History>
      <TicketHistoryItem>
        <Date>2011-06-20T23:31:06.6412063Z</Date>
        <Subject>Test Subject</Subject>
        <Information>Test History Note</Information>
      </TicketHistoryItem>
    </History>
  </Ticket>
```

Return to *7.41 Support Ticket*.

Return to *7 Application Programming Interface Reference Guide*.

7.41.5 Action Support Tickets Create

The Action Support Tickets Create call creates a new support ticket for a specified organization. If successful, the call returns a 204 No Content header because the information in the call is submitted asynchronously to the support system.

<Email> is required and must match an email contact method for a contact in the organization.

Both <Subject> and <Details> are required.

Request

```
POST http://{Terremark URI}/admin/tickets/organizations/{organization identifier}/action/createTicket
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/tickets/organizations/1/action/createTicket
```

Body

```
<CreateTicket>
  <Email>{preferred contact email}</Email> <!-- Required -->
  <Subject>{subject of support ticket}</Subject> <!-- Required -->
  <Details>{details of support ticket}</Details> <!-- Required -->
</CreateTicket>
```

EXAMPLE

```
<CreateTicket>
  <Email>user@customer.com</Email>
  <Subject>Failed to Create VM</Subject>
  <Details>Clicked on Environments | Create Server and nothing happened.</Details>
</CreateTicket>
```

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Thu, 09 Jun 2011 16:50:18 GMT
```

Return to *7.41 Support Ticket*.

Return to *7 Application Programming Interface Reference Guide*.

7.42 Catalog

7.42.1 Get Catalog 1151
7.42.2 Get Catalog by Location 1159
7.42.3 Get Catalog by ID 1165
7.42.4 Get Catalog Configuration 1169
7.42.5 Get Catalog Log 1172
7.42.6 Action Catalog Create 1180
7.42.7 Action Catalog File 1184
7.42.8 Action Catalog Remove 1186

Advance to *7.40 SSH Key*.

This section contains the calls for the Catalog entities.

Return to *7 Application Programming Interface Reference Guide*.

7.42.1 Get Catalog

The Get Catalog call returns information regarding the catalog for an organization at all locations.

<Status> for <CatalogEntry> refers to the status of the catalog or of the OVF file for the virtual machine (VM). Permitted values are:

- **Active** – The catalog item is created but no files are uploaded.
- **Validated** – OVF successfully validated and is waiting for the image file to upload.
- **Failed** – VM upload failed.
- **Completed** – VM has successfully completed the entire upload process and is available for import.
- **Validating** – OVF validation is in progress.

<Type> refers to <Alerts> created while uploading or exporting a virtual machine. Permitted values are:

- **Info** – the virtual machine has an informational note.
- **Warning** – the VM has a non-fatal potential issue; for example, processor count exceeds operating system limits, an issue which can be corrected when importing.
- **Error** – VM has a fatal issue; for example, disk count exceeds limits.

<Name> for <File> refers to the filename of the OVF file and the VM images, the VMDK files. The name for the OVF file is always `upload.ovf`. The name for any VMDK file is as entered in the OVF file.

<Status> for <File> refers to the status of the upload for the OVF file and the VM images, the VMDK files. Permitted values are:

- **Ready** –File transfer has not yet begun.
- **InProgress** - File transfer is in progress.
- **Failed** –File transfer failed.
- **Verified** –File is verified.
- **Completed** –File transfer completed.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

Note: A catalog item for which the OVF file is validating may not be removed. As seen in the response, for a <CatalogEntry> with a <Status>Validating</Status>, the <Action> with a `name` of `remove` has the `actionDisabled` attribute set to `disabled`.

<CatalogType> refers to the source operation for the catalog item. Permitted values are:

- **Upload** –Catalog item was uploaded to the catalog from the organization.

- **Export** - Catalog item was exported to the catalog from a virtual machine in the environment.

Request

```
GET http://{Terremark URI}/admin/catalog/organizations/{organization identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/catalog/organizations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Catalog href="/admin/catalog/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Locations>

    <Location href="/locations/{location identifier}" name="{location name}"
      type="application/vnd.tmrk.cloud.location">

      <Links>

        <Link href="/admin/catalog/organizations/{organization identifier}/locations/{location
          identifier}" type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"
          rel="alternate"/>

      </Links>

      <Actions>

        <Action href="/admin/catalog/organizations/{organization identifier}/action/createCatalogEntry"
          name="createCatalogEntry" type="application/vnd.tmrk.cloud.admin.createCatalogEntry"/>

      </Actions>

      <Storage>

        <Capacity>

          <Unit>{unit of capacity value}</Unit>

          <Value>{total VM upload storage capacity}</Value>

        </Capacity>
```

```
      <Used>
        <Unit>{unit of used value}</Unit>
        <Value>{VM upload storage capacity used}</Value>
      </Used>
    </Storage>
    <Catalog>
      <CatalogEntry href="/admin/catalog/{catalog identifier}" name="{catalog name}"
        type="application/vnd.tmrk.cloud.admin.catalogEntry">
        <Links>
          <Link href="/admin/organizations/{organization identifier}"
            type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
          <Link href="/organizations/{organization identifier}"
            type="application/vnd.tmrk.cloud.organization" rel="up"/>
        </Links>
        <Actions>
          <Action href="/admin/catalog/{catalog identifier}" name="remove"/>
        </Actions>
        <Tasks>
          <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
            <Operation>{name of action performed}</Operation>
            <Status>{Queued | Running | Failed | Success | Error}</Status>
            <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type
              of item acted upon}"/>
            <StartTime>{time action started}</StartTime>
            <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or
              Running -->
            <Notes>{notes on action}</Notes>
            <ErrorMessage>{error message}</ErrorMessage>
            <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user
              email domain part} | {API user family name}, {API user given name}}"
              type="application/vnd.tmrk.cloud.admin.user"/>
          </Task>
        </Tasks>
        <Status>{Active | Validated | Failed | Completed | Validating}</Status>
        <Alerts>
          <Alert>
            <Type>{Info | Warning | Error}</Type>
            <Details>{alert detail message}</Details>
          </Alert>
```

```
            ⋮
        </Alerts>
        <Files>
          <File>
            <UploadUrl>{opaque file reference}</UploadUrl>
            <Name>{uploaded file name}</Name>
            <Size>
              <Unit>{unit of size value}</Unit>
              <Value>{file size}</Value>
            </Size>
            <BytesTransferred>{bytes uploaded}</BytesTransferred>
            <Status>{Ready | InProgress | Failed | Verified | Completed}</Status>
          </File>
            ⋮
        </Files>
        <Configuration href="/admin/catalog/{catalog identifier}/configuration"
          type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
        <CatalogType>{Upload | Export}</CatalogType>
      </CatalogEntry>
        ⋮
    </Location>
      ⋮
  </Locations>
</Catalog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 5820
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:08:11 GMT
<Catalog href="/admin/catalog/organizations/1" type="application/vnd.tmrk.cloud.admin.catalogEntry;
  type=collection" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>
  </Links>
  <Actions>
```

```
    <Action href="/admin/catalog/organizations/1/action/createCatalogEntry" name="createCatalogEntry"
      type="application/vnd.tmrk.cloud.admin.createCatalogEntry"/>
  </Actions>
  <Locations>
    <Location href="/locations/1" name="Miami" type="application/vnd.tmrk.cloud.location">
      <Links>
        <Link href="/admin/catalog/organizations/1/locations/1"
          type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>
      </Links>
      <Storage>
        <Capacity>
          <Unit>GB</Unit>
          <Value>100</Value>
        </Capacity>
        <Used>
          <Unit>GB</Unit>
          <Value>50</Value>
        </Used>
      </Storage>
      <Catalog>
        <CatalogEntry href="/admin/catalog/1" name="Catalog Item 1"
          type="application/vnd.tmrk.cloud.admin.catalogEntry">
          <Links>
            <Link href="/admin/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
            <Link href="/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.organization" rel="up"/>
          </Links>
          <Actions>
            <Action href="/admin/catalog/1" name="remove"/>
          </Actions>
          <Status>Active</Status>
          <Files>
            <File>
              <UploadUrl>http://uploads.terremark.com/1/upload.ovf</UploadUrl>
              <Name>upload.ovf</Name>
              <Size>
                <Unit>Bytes</Unit>
                <Value>23344</Value>
```

```
        </Size>
        <BytesTransferred>0</BytesTransferred>
        <Status>Failed</Status>
      </File>
    </Files>
    <Configuration href="/admin/catalog/1/configuration"
      type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
    <CatalogType>Upload</CatalogType>
  </CatalogEntry>
  <CatalogEntry href="/admin/catalog/2" name="Catalog Item 2"
    type="application/vnd.tmrk.cloud.admin.catalogEntry">
    <Links>
      <Link href="/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.organization" rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/catalog/2" name="remove" actionDisabled="disabled"/>
    </Actions>
    <Tasks>
      <Task href="/tasks/384" type="application/vnd.tmrk.cloud.task">
        <Operation>Create Export Catalog Item</Operation>
        <Status>Queued</Status>
        <ImpactedItem href="/admin/catalog/2" name="Catalog Item 2"
          type="application/vnd.tmrk.cloud.admin.catalogEntry"/>
        <StartTime>2012-01-13T22:08:11.225404Z</StartTime>
        <Notes>Some notes about the operation.</Notes>
        <InitiatedBy href="/admin/users/1" name="User 1"
          type="application/vnd.tmrk.cloud.admin.user"/>
      </Task>
      <TotalCount>1</TotalCount>
    </Tasks>
    <Status>Active</Status>
    <Configuration href="/admin/catalog/2/configuration"
      type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
    <CatalogType>Export</CatalogType>
  </CatalogEntry>
</Catalog>
```

```
    </Location>
    <Location href="/locations/2" name="Culpepper" type="application/vnd.tmrk.cloud.location">
      <Links>
        <Link href="/admin/catalog/organizations/1/locations/2"
          type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection" rel="down"/>
      </Links>
      <Storage>
        <Capacity>
          <Unit>GB</Unit>
          <Value>100</Value>
        </Capacity>
        <Used>
          <Unit>GB</Unit>
          <Value>50</Value>
        </Used>
      </Storage>
      <Catalog>
        <CatalogEntry href="/admin/catalog/1" name="Catalog Item 1"
          type="application/vnd.tmrk.cloud.admin.catalogEntry">
          <Links>
            <Link href="/admin/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
            <Link href="/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.organization" rel="up"/>
          </Links>
          <Actions>
            <Action href="/admin/catalog/1" name="remove"/>
          </Actions>
          <Status>Active</Status>
          <Files>
            <File>
              <UploadUrl>http://uploads.terremark.com/1/upload.ovf</UploadUrl>
              <Name>upload.ovf</Name>
              <Size>
                <Unit>Bytes</Unit>
                <Value>23344</Value>
              </Size>
              <BytesTransferred>0</BytesTransferred>
```

```
            <Status>Failed</Status>
          </File>
        </Files>
        <Configuration href="/admin/catalog/1/configuration"
          type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
        <CatalogType>Upload</CatalogType>
      </CatalogEntry>
      <CatalogEntry href="/admin/catalog/2" name="Catalog Item 2"
        type="application/vnd.tmrk.cloud.admin.catalogEntry">
        <Links>
          <Link href="/admin/organizations/1" name="Organization 1"
            type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
          <Link href="/organizations/1" name="Organization 1"
            type="application/vnd.tmrk.cloud.organization" rel="up"/>
        </Links>
        <Actions>
          <Action href="/admin/catalog/2" name="remove" actionDisabled="disabled"/>
        </Actions>
        <Tasks>
          <Task href="/tasks/384" type="application/vnd.tmrk.cloud.task">
            <Operation>Create Export Catalog Item</Operation>
            <Status>Queued</Status>
            <ImpactedItem href="/admin/catalog/2" name="Catalog Item 2"
              type="application/vnd.tmrk.cloud.admin.catalogEntry"/>
            <StartTime>2012-01-13T22:08:11.225404Z</StartTime>
            <Notes>Some notes about the operation.</Notes>
            <InitiatedBy href="/admin/users/1" name="User 1"
              type="application/vnd.tmrk.cloud.admin.user"/>
          </Task>
          <TotalCount>1</TotalCount>
        </Tasks>
        <Status>Active</Status>
        <Configuration href="/admin/catalog/2/configuration"
          type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
        <CatalogType>Export</CatalogType>
      </CatalogEntry>
    </Catalog>
  </Location>
</Locations>
```

```
</Catalog>
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.2 Get Catalog by Location

The Get Catalog by Location call returns information regarding the catalog for an organization at a specified location.

<Status> for <CatalogEntry> refers to the status of the catalog item or of the OVF file for the virtual machine (VM). Permitted values are:

- **Active** – The catalog item is created but no files are uploaded.
- **Validated** – OVF successfully validated and is waiting for the image file to upload.
- **Failed** – VM upload failed.
- **Completed** – VM has successfully completed the entire upload process and is available for import.
- **Validating** – OVF validation is in progress.

<Type> refers to <Alerts> created while uploading or exporting a virtual machine. Permitted values are:

- **Info** – the virtual machine has an informational note.
- **Warning** – the VM has a non-fatal potential issue; for example, processor count exceeds operating system limits, an issue which can be corrected when importing.
- **Error** – VM has a fatal issue; for example, disk count exceeds limits.

<Name> for <File> refers to the filename of the OVF file and the VM images, the VMDK files. The name for the OVF file is always `upload.ovf`. The name for any VMDK file is as entered in the OVF file.

<Status> for <File> refers to the status of the upload for the OVF file and the VM images, the VMDK files. Permitted values are:

- **Ready** –File transfer has not yet begun.
- **InProgress** - File transfer is in progress.
- **Failed** –File transfer failed.
- **Verified** –File is verified.
- **Completed** –File transfer completed.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

Note: A catalog item for which the OVF file is validating may not be removed. As seen in the response, for a <CatalogEntry> with a <Status>Validating</Status>, the <Action> with a `name` of `remove` has the `actionDisabled` attribute set to `disabled`.

<CatalogType> refers to the source operation for the catalog item. Permitted values are:

- **Upload** –Catalog item was uploaded to the catalog from the organization.
- **Export** - Catalog item was exported to the catalog from a virtual machine in the environment.

Request

```
GET http://{Terremark URI}/admin/catalog/organizations/{organization identifier}/locations/{location
  identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/catalog/organizations/1/locations/1
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<Catalog href="/admin/catalog/organizations/{organization identifier}"
  type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Locations>

    <Location href="/locations/{location identifier}" type="application/vnd.tmrk.cloud.location">

      <Links>

        <Link href="/admin/catalog/organizations/{organization identifier}/locations/{location
          identifier}" type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"
          rel="alternate"/>

      </Links>

      <Actions>

        <Action href="/admin/catalog/organizations/{organization identifier}/action/createCatalogEntry"
          name="createCatalogEntry" type="application/vnd.tmrk.cloud.admin.createCatalogEntry"/>

      </Actions>

      <Storage>
```

```
    <Capacity>
      <Unit>{unit of capacity value}</Unit>
      <Value>{total VM upload storage capacity}</Value>
    </Capacity>
    <Used>
      <Unit>{unit of used value}</Unit>
      <Value>{VM upload storage capacity used}</Value>
    </Used>
  </Storage>
  <Catalog>
    <CatalogEntry href="/admin/catalog/{catalog identifier}" name="{catalog name}"
      type="application/vnd.tmrk.cloud.admin.catalogEntry">
      <Links>
        <Link href="/admin/organizations/{organization identifier}"
          type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
        <Link href="/organizations/{organization identifier}"
          type="application/vnd.tmrk.cloud.organization" rel="up"/>
      </Links>
      <Actions>
        <Action href="/admin/catalog/{catalog identifier}" name="remove"/>
      </Actions>
      <Tasks>
        <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
          <Operation>{name of action performed}</Operation>
          <Status>{Queued | Running | Failed | Success | Error}</Status>
          <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type
            of item acted upon}"/>
          <StartTime>{time action started}</StartTime>
          <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or
            Running -->
          <Notes>{notes on action}</Notes>
          <ErrorMessage>{error message}</ErrorMessage>
          <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user
            email domain part} | {API user family name}, {API user given name}}"
            type="application/vnd.tmrk.cloud.admin.user"/>
        </Task>
      </Tasks>
      <Status>{Active | Validated | Failed | Completed | Validating}</Status>
      <Alerts>
```

```
          <Alert>
            <Type>{Info | Warning | Error}</Type>
            <Details>{alert detail message}</Details>
          </Alert>
            ⋮
        </Alerts>
        <Files>
          <File>
            <UploadUrl>{opaque file reference}</UploadUrl>
            <Name>{uploaded file name}</Name>
            <Size>
              <Unit>{unit of size value}</Unit>
              <Value>{file size}</Value>
            </Size>
            <BytesTransferred>{bytes uploaded}</BytesTransferred>
            <Status>{Ready | InProgress | Failed | Verified | Completed}</Status>
          </File>
            ⋮
        </Files>
        <Configuration href="/admin/catalog/{catalog identifier}/configuration"
          type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
        <CatalogType>{Upload | Export}</CatalogType>
      </CatalogEntry>
        ⋮
    </Location>
  </Locations>
</Catalog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 3232
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:03:08 GMT

<Catalog href="/admin/catalog/organizations/1/locations/1"
  type="application/vnd.tmrk.cloud.admin.catalogEntry; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
```

```
    <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
      rel="up"/>

    <Link href="/admin/catalog/organizations/1" type="application/vnd.tmrk.cloud.admin.catalogEntry;
      type=collection" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/catalog/organizations/1/action/createCatalogEntry" name="createCatalogEntry"
      type="application/vnd.tmrk.cloud.admin.createCatalogEntry"/>

  </Actions>

  <Locations>

    <Location href="/locations/1" name="Miami" type="application/vnd.tmrk.cloud.location">

      <Storage>

        <Capacity>

          <Unit>GB</Unit>

          <Value>100</Value>

        </Capacity>

        <Used>

          <Unit>GB</Unit>

          <Value>50</Value>

        </Used>

      </Storage>

      <Catalog>

        <CatalogEntry href="/admin/catalog/1" name="Catalog Item 1"
          type="application/vnd.tmrk.cloud.admin.catalogEntry">

          <Links>

            <Link href="/admin/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

            <Link href="/organizations/1" name="Organization 1"
              type="application/vnd.tmrk.cloud.organization" rel="up"/>

          </Links>

          <Actions>

            <Action href="/admin/catalog/1" name="remove"/>

          </Actions>

          <Status>Active</Status>

          <Files>

            <File>

              <UploadUrl>http://uploads.terremark.com/1/upload.ovf</UploadUrl>

              <Name>upload.ovf</Name>

              <Size>
```

```
        <Unit>Bytes</Unit>
        <Value>23344</Value>
      </Size>
      <BytesTransferred>0</BytesTransferred>
      <Status>Failed</Status>
    </File>
  </Files>
  <Configuration href="/admin/catalog/1/configuration"
    type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
  <CatalogType>Upload</CatalogType>
</CatalogEntry>
<CatalogEntry href="/admin/catalog/2" name="Catalog Item 2"
  type="application/vnd.tmrk.cloud.admin.catalogEntry">
  <Links>
    <Link href="/admin/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/1" name="Organization 1"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/catalog/2" name="remove" actionDisabled="disabled"/>
  </Actions>
  <Tasks>
    <Task href="/tasks/384" type="application/vnd.tmrk.cloud.task">
      <Operation>Create Export Catalog Item</Operation>
      <Status>Queued</Status>
      <ImpactedItem href="/admin/catalog/2" name="Catalog Item 2"
        type="application/vnd.tmrk.cloud.admin.catalogEntry"/>
      <StartTime>2012-01-13T22:03:08.6883454Z</StartTime>
      <Notes>Some notes about the operation.</Notes>
      <InitiatedBy href="/admin/users/1" name="User 1"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
    <TotalCount>1</TotalCount>
  </Tasks>
  <Status>Active</Status>
  <Configuration href="/admin/catalog/2/configuration"
    type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
  <CatalogType>Export</CatalogType>
```

```
        </CatalogEntry>
      </Catalog>
    </Location>
  </Locations>
</Catalog>
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.3 Get Catalog by ID

The Get Catalog by ID call returns information regarding a specified catalog item for an organization.

<Status> for <CatalogEntry> refers to the status of the catalog item or of the OVF file for the virtual machine (VM). Permitted values are:

- **Active** – The catalog item is created but no files are uploaded.
- **Validated** – OVF successfully validated and is waiting for the image file to upload.
- **Failed** – VM upload failed.
- **Completed** – VM has successfully completed the entire upload process and is available for import.
- **Validating** – OVF validation is in progress.

<Type> refers to <Alerts> created while uploading or exporting a virtual machine. Permitted values are:

- **Info** – the virtual machine has an informational note.
- **Warning** – the VM has a non-fatal potential issue; for example, processor count exceeds operating system limits, an issue which can be corrected when importing.
- **Error** – VM has a fatal issue; for example, disk count exceeds limits.

<Name> for <File> refers to the filename of the OVF file and the VM images, the VMDK files. The name for the OVF file is always `upload.ovf`. The name for any VMDK file is as entered in the OVF file.

<Status> for <File> refers to the status of the upload for the OVF file and the VM images, the VMDK files. Permitted values are:

- **Ready** –File transfer has not yet begun.
- **InProgress** - File transfer is in progress.
- **Failed** –File transfer failed.
- **Verified** –File is verified.
- **Completed** –File transfer completed.

<ProcessorCount> refers to the number of processors in the virtual machine. Permitted values are: 1, 2, 4, or 8.

Note: A catalog item for which the OVF file is validating may not be removed. As seen in the response, for a <CatalogEntry> with a <Status>Validating</Status>, the <Action> with a `name` of `remove` has the `actionDisabled` attribute set to `disabled`.

<CatalogType> refers to the source operation for the catalog item. Permitted values are:

- **Upload** –Catalog item was uploaded to the catalog from the organization.
- **Export** - Catalog item was exported to the catalog from a virtual machine in the environment.

Live Specification Test Values

Condition	Outcome
catalog identifier mod 2 = 0	Status Validated
organization identifier mod 2 = 1 and location not = 3	Upload enabled

Request

```
GET http://{Terremark URI}/admin/catalog/{catalog identifier}
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/catalog/2
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<CatalogEntry href="/admin/catalog/{catalog identifier}" name="{catalog name}"
  type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/catalog/{catalog identifier}" name="remove"/>

  </Actions>

  <Tasks>
```

```
  <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
    <Operation>{name of action performed}</Operation>
    <Status>{Queued | Running | Failed | Success | Error}</Status>
    <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
      item acted upon}"/>
    <StartTime>{time action started}</StartTime>
    <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
    <Notes>{notes on action}</Notes>
    <ErrorMessage>{error message}</ErrorMessage>
    <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
      domain part} | {API user family name}, {API user given name}}"
      type="application/vnd.tmrk.cloud.admin.user"/>
  </Task>
</Tasks>
<Status>{Active | Validated | Failed | Completed | Validating}</Status>
<Alerts>
  <Alert>
    <Type>{Info | Warning | Error}</Type>
    <Details>{alert detail message}</Details>
  </Alert>
    ⋮
</Alerts>
<Files>
  <File>
    <UploadUrl>{opaque file reference}</UploadUrl>
    <Name>{uploaded file name}</Name>
    <Size>
      <Unit>{unit of size value}</Unit>
      <Value>{file size}</Value>
    </Size>
    <BytesTransferred>{bytes uploaded}</BytesTransferred>
    <Status>{Ready | InProgress | Failed | Verified | Completed}</Status>
  </File>
    ⋮
</Files>
<Configuration href="/admin/catalog/{catalog identifier}/configuration"
  type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
<CatalogType>{Upload | Export}</CatalogType>
```

```
  </CatalogEntry>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1232
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sat, 09 Jul 2011 15:43:46 GMT

<CatalogEntry href="/admin/catalog/2" name="Catalog Item 2"
  type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>

    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>

  </Links>

  <Actions>

    <Action href="/admin/catalog/2" name="remove"/>

  </Actions>

  <Status>Validated</Status>

  <Alerts>

    <Alert>

      <Type>Warning</Type>

      <Details>Processor has to be 1, 2, 4 or 8</Details>

    </Alert>

  </Alerts>

  <Files>

    <File>

      <UploadUrl>http://uploads.terremark.com/2/upload.ovf</UploadUrl>

      <Name>upload.ovf</Name>

      <Size>

        <Unit>Bytes</Unit>

        <Value>23344</Value>

      </Size>

      <BytesTransferred>23344</BytesTransferred>

      <Status>Verified</Status>

    </File>

    <File>

      <UploadUrl>http://uploads.terremark.com/2/file1.vmdk</UploadUrl>
```

```
      <Name>file1.vmdk</Name>
      <Size>
        <Unit>Bytes</Unit>
        <Value>23344</Value>
      </Size>
      <BytesTransferred>0</BytesTransferred>
      <Status>Ready</Status>
    </File>
    <File>
      <UploadUrl>http://uploads.terremark.com/2/file2.vmdk</UploadUrl>
      <Name>file2.vmdk</Name>
      <Size>
        <Unit>Bytes</Unit>
        <Value>2334422</Value>
      </Size>
      <BytesTransferred>2334422</BytesTransferred>
      <Status>Completed</Status>
    </File>
  </Files>
  <Configuration href="/admin/catalog/2/configuration"
    type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
  <CatalogType>Export</CatalogType>
</CatalogEntry>
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.4 Get Catalog Configuration

The Get Catalog Configuration call returns information regarding the configuration of a specified catalog item.

Note: To retrieve the catalog configuration requires a catalog item to have <Status>with a value `Validated` or `Completed`.

Live Specification Test Values

Condition	Outcome
catalog identifier mod 2 = 0	Status validated
organization identifier mod 2 = 1 and location not = 3	Upload enabled

Request

```
GET http://{Terremark URI}/admin/catalog/{catalog identifier}/configuration
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/catalog/2/configuration
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntryConfiguration
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<CatalogEntryConfiguration href="/admin/catalog/{catalog identifier}/configuration"
  type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/catalog/{catalog identifier}" name="{catalog name}"
      type="application/vnd.tmrk.cloud.admin.catalogEntry" rel="up"/>

  </Links>

  <ProcessorCount>{1 | 2 | 4 | 8}</ProcessorCount>

  <Memory>

    <Unit>{unit of memory value}</Unit>

    <Value>{memory size}</Value>

  </Memory>

  <OperatingSystem>{operating system}</OperatingSystem>

  <Disks>

    <Disk>

      <Index>{disk number, 0-based}</Index>

      <Size>

        <Unit>{unit of size value}</Unit>

        <Value>{size on disk}</Value>

      </Size>

      <Name>{disk file name}</Name>

    </Disk>

      ⋮

  </Disks>

  <NetworkAdapters>{count of network adapters in VM}</NetworkAdapters>
```

```
  <NetworkMappings>
    <NetworkMapping>
      <Name>{name of network mapping}</Name>
      <Description>{textual description}</Description>
    </NetworkMapping>
      ⋮
  </NetworkMappings>
  <LicensedBy>{ServiceProvider | Customer}</LicensedBy>
  <LicenseType>{Template | Custom}</LicenseType>
  <LicenseCost>{monthly license cost}</LicenseCost>
</CatalogEntryConfiguration>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 1057
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntryConfiguration
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 17 Feb 2012 21:01:17 GMT

<CatalogEntryConfiguration href="/admin/catalog/2/configuration"
  type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Links>
    <Link href="/admin/catalog/2" name="Catalog Item 2"
      type="application/vnd.tmrk.cloud.admin.catalogEntry" rel="up"/>
  </Links>
  <ProcessorCount>1</ProcessorCount>
  <Memory>
    <Unit>MB</Unit>
    <Value>256</Value>
  </Memory>
  <OperatingSystem>Win32 OS</OperatingSystem>
  <Disks>
    <Disk>
      <Index>0</Index>
      <Size>
        <Unit>GB</Unit>
        <Value>2</Value>
      </Size>
      <Name>disk1.vmdk</Name>
```

```
      </Disk>
      <Disk>
        <Index>1</Index>
        <Size>
          <Unit>GB</Unit>
          <Value>10</Value>
        </Size>
        <Name>disk2.vmdk</Name>
      </Disk>
    </Disks>
    <NetworkAdapters>2</NetworkAdapters>
    <NetworkMappings>
      <NetworkMapping>
        <Name>Mapping 1</Name>
        <Description>DMZ Network</Description>
      </NetworkMapping>
      <NetworkMapping>
        <Name>Mapping 2</Name>
        <Description>INT Network</Description>
      </NetworkMapping>
    </NetworkMappings>
    <LicensedBy>Customer</LicensedBy>
    <LicenseType>Template</LicenseType>
    <LicenseCost>0</LicenseCost>
  </CatalogEntryConfiguration>
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.5 Get Catalog Log

The Get Catalog Log call returns information regarding the catalog log. The catalog log is a history of changes to the catalog. Catalog log entries are retained for twelve months.

A given <Link> for paging is present only if meaningful in the context of the response. For example, when on the first page the <Link> with a `rel` of `first` and the <Link> with a `rel` of `previous` are not meaningful and will not appear.

The call may include optional query parameters. Separate query parameters from the call with a question mark (`?`) and separate parameters from each other with an ampersand (`&`). Permitted query parameters are:

Parameter	Usage
page	Use of page chunks the returned data and returns the requested page; default = page 1
pageSize	Number of items returned per page between 1 and 1000; default = 20
startDate	Enter in ISO8601 format; time is always start of day and if entered is ignored; default = earliest record
endDate	Enter in ISO8601 format; time is always end of day and if entered is ignored; default = latest record
direction	asc ascending desc descending default = descending
sortBy	All CatalogLogEntry elements are permitted as the sort key: • Date • User • Location • CatalogEntry • Event • File

Request

```
GET http://{Terremark URI}/admin/catalog/organizations/{organization identifier}/log
```

EXAMPLE

```
GET http://services.enterprisecloud.terremark.com/admin/catalog/organizations/1/log
```

Body

none

Response

```
HTTP/1.1 200 OK
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}

<CatalogLog href="/admin/catalog/organizations/{organization identifier}/log"
  type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>

    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/catalog/organizations/{organization identifier}/log?sortBy={Date | User |
      Location | CatalogEntry | Event | File}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
```

```
      date}&amp;endDate={retrieval end date}" rel="first"/>

    <Link href="/admin/catalog/organizations/{organization identifier}/log?sortBy={Date | User |
      Location | CatalogEntry | Event | File}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" rel="previous"/>

    <Link href="/admin/catalog/organizations/{organization identifier}/log?sortBy={Date | User |
      Location | CatalogEntry | Event | File}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" rel="next"/>

    <Link href="/admin/catalog/organizations/{organization identifier}/log?sortBy={Date | User |
      Location | CatalogEntry | Event | File}&amp;direction={asc | desc}&amp;page={page
      number}&amp;pageSize={items per page}&amp;startDate={retrieval start
      date}&amp;endDate={retrieval end date}" rel="last"/>

  </Links>

  <CatalogLogEntry>

    <Date>{date of activity}</Date>

    <User href="/admin/users/{user identifier}" type="application/vnd.tmrk.cloud.admin.user">

      <FirstName>{given name}</FirstName>

      <LastName>{family name}</LastName>

    </User>

    <Location href="/locations/{location identifier}" name="{location name}"
      type="application/vnd.tmrk.cloud.location"/>

    <CatalogEntryName>{catalog item name}</CatalogEntryName>

    <Event>{CatalogCreated | CatalogDeleted | UploadStarted | UploadFinished}</Event>

    <File>{filename}</File>

  </CatalogLogEntry>

</CatalogLog>
```

EXAMPLE

```
HTTP/1.1 200 OK
  Content-Length: 8894
  Content-Type: application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Sat, 09 Jul 2011 15:50:30 GMT

<CatalogLog href="/admin/catalog/organizations/1/log"
  type="application/vnd.tmrk.cloud.admin.catalogLogEntry; type=collection"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">

  <Links>

    <Link href="/admin/organizations/1" type="application/vnd.tmrk.cloud.admin.organization"
      rel="up"/>

    <Link href="/organizations/1" type="application/vnd.tmrk.cloud.organization" rel="up"/>

    <Link href="/admin/catalog/organizations/1/log?page=2&amp;pagesize=20" rel="next"/>

    <Link href="/admin/catalog/organizations/1/log?page=5&amp;pagesize=20" rel="last"/>
```

```
  </Links>
  <CatalogLogEntry>
    <Date>2011-05-10T22:58:00</Date>
    <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2005</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1451</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T22:57:00</Date>
    <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2005</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1450</CatalogEntryName>
    <Event>CatalogDeleted</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-09T20:57:00</Date>
    <User href="/admin/users/2006" name="2006@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2006</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1376</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-09T20:57:00</Date>
    <User href="/admin/users/2006" name="2006@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2006</LastName>
    </User>
```

```
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1377</CatalogEntryName>
    <Event>UploadStarted</Event>
    <File>OVF File</File>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-09T20:57:00</Date>
    <User href="/admin/users/2006" name="2006@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2006</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1378</CatalogEntryName>
    <Event>UploadFinished</Event>
    <File>OVF File</File>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-09T20:57:00</Date>
    <User href="/admin/users/2006" name="2006@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2006</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1379</CatalogEntryName>
    <Event>UploadStarted</Event>
    <File>Options-disk1.vmdk</File>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-09T20:57:00</Date>
    <User href="/admin/users/2006" name="2006@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2006</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1380</CatalogEntryName>
    <Event>UploadFinished</Event>
    <File>Options-disk1.vmdk</File>
```

```
</CatalogLogEntry>
<CatalogLogEntry>
  <Date>2011-05-09T20:55:00</Date>
  <User href="/admin/users/2011" name="2011@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
    <FirstName>User</FirstName>
    <LastName>2011</LastName>
  </User>
  <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
  <CatalogEntryName>Catalog Entry 1374</CatalogEntryName>
  <Event>CatalogCreated</Event>
</CatalogLogEntry>
<CatalogLogEntry>
  <Date>2011-05-09T20:55:00</Date>
  <User href="/admin/users/2011" name="2011@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
    <FirstName>User</FirstName>
    <LastName>2011</LastName>
  </User>
  <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
  <CatalogEntryName>Catalog Entry 1375</CatalogEntryName>
  <Event>CatalogDeleted</Event>
</CatalogLogEntry>
<CatalogLogEntry>
  <Date>2011-05-10T22:54:00</Date>
  <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
    <FirstName>User</FirstName>
    <LastName>2005</LastName>
  </User>
  <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
  <CatalogEntryName>Catalog Entry 1448</CatalogEntryName>
  <Event>CatalogDeleted</Event>
</CatalogLogEntry>
<CatalogLogEntry>
  <Date>2011-05-10T22:54:00</Date>
  <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
    <FirstName>User</FirstName>
    <LastName>2005</LastName>
  </User>
```

```
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1449</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T14:53:00</Date>
    <User href="/admin/users/2011" name="2011@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2011</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1407</CatalogEntryName>
    <Event>CatalogDeleted</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T14:52:00</Date>
    <User href="/admin/users/2011" name="2011@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2011</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1406</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T22:52:00</Date>
    <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2005</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1447</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T17:49:00</Date>
    <User href="/admin/users/2004" name="2004@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
```

```
      <FirstName>User</FirstName>
      <LastName>2004</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1421</CatalogEntryName>
    <Event>CatalogCreated</Event>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T17:49:00</Date>
    <User href="/admin/users/2004" name="2004@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2004</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1422</CatalogEntryName>
    <Event>UploadStarted</Event>
    <File>OVF File</File>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-10T17:49:00</Date>
    <User href="/admin/users/2004" name="2004@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2004</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1423</CatalogEntryName>
    <Event>UploadFinished</Event>
    <File>OVF File</File>
  </CatalogLogEntry>
  <CatalogLogEntry>
    <Date>2011-05-11T15:48:00</Date>
    <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
      <FirstName>User</FirstName>
      <LastName>2005</LastName>
    </User>
    <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
    <CatalogEntryName>Catalog Entry 1460</CatalogEntryName>
```

```
      <Event>UploadStarted</Event>
      <File>basicESX-disk1.vmdk</File>
    </CatalogLogEntry>
    <CatalogLogEntry>
      <Date>2011-05-11T15:48:00</Date>
      <User href="/admin/users/2005" name="2005@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
        <FirstName>User</FirstName>
        <LastName>2005</LastName>
      </User>
      <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
      <CatalogEntryName>Catalog Entry 1461</CatalogEntryName>
      <Event>UploadFinished</Event>
      <File>basicESX-disk1.vmdk</File>
    </CatalogLogEntry>
    <CatalogLogEntry>
      <Date>2011-05-05T21:46:00</Date>
      <User href="/admin/users/2004" name="2004@xyz.com" type="application/vnd.tmrk.cloud.admin.user">
        <FirstName>User</FirstName>
        <LastName>2004</LastName>
      </User>
      <Location href="/locations/1" type="application/vnd.tmrk.cloud.location"/>
      <CatalogEntryName>Catalog Entry 1368</CatalogEntryName>
      <Event>CatalogDeleted</Event>
    </CatalogLogEntry>
  </CatalogLog>
```


Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.6 Action Catalog Create

The Action Catalog Create call creates a catalog item for an organization at a specified location into which a virtual machine may be uploaded. If successful, the call returns information regarding the catalog item that was created.

The `name` attribute on <CreateCatalogEntry … > is required.

Note: The `name` may not be that of another catalog item and must not exceed fifty characters.

The `href` attribute on <Location … > is required to identify the location in which to create the catalog item.

<Status> for <CatalogEntry> refers to the status of the catalog item or of the OVF file for the virtual machine (VM). Permitted values are:

- **Active** – The catalog item is created but no files are uploaded.
- **Validated** – OVF successfully validated and is waiting for the image file to upload.
- **Failed** – VM upload failed.
- **Completed** – VM has successfully completed the entire upload process and is available for import.
- **Validating** – OVF validation is in progress.

<Type> refers to <Alerts> created while uploading or exporting a virtual machine. Permitted values are:

- **Info** – the virtual machine has an informational note.
- **Warning** – the VM has a non-fatal potential issue; for example, processor count exceeds operating system limits, an issue which can be corrected when importing.
- **Error** – VM has a fatal issue; for example, disk count exceeds limits.

<Name> for <File> refers to the filename of the OVF file and the VM images, the VMDK files. The name for the OVF file is always `upload.ovf`. The name for any VMDK file is as entered in the OVF file.

<Status> for <File> refers to the status of the upload for the OVF file and the VM images, the VMDK files. Permitted values are:

- **Ready** –File transfer has not yet begun.
- **InProgress** - File transfer is in progress.
- **Failed** –File transfer failed.
- **Verified** –File is verified.
- **Completed** –File transfer completed.

<CatalogType> refers to the source operation for the catalog item. Permitted values are:

- **Upload** –Catalog item was uploaded to the catalog from the organization.
- **Export** - Catalog item was exported to the catalog from a virtual machine in the environment.

Live Specification Test Values

Condition	Outcome
organization identifier mod 2 = 1 and location not = 3	Upload enabled

Request

```
POST http://{Terremark URI}/admin/catalog/organizations/{organization
  identifier}/action/createCatalogEntry
```

EXAMPLE

```
POST http://services.enterprisecloud.terremark.com/admin/catalog/organizations/1/ …
  action/createCatalogEntry
```

Body

```
<CreateCatalogEntry name="{catalog item name}"> <!-- Required -->
  <Location href="/locations/{location identifier}"/> <!-- Required -->
</CreateCatalogEntry>
```

EXAMPLE

```
<CreateCatalogEntry name="New Catalog Entry">
  <Location href="/locations/1"/>
</CreateCatalogEntry>
```

Response

```
HTTP/1.1 201 Created
  Content-Length: {length of response body}
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry
  Location: /admin/catalog/{catalog identifier}
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
<CatalogEntry href="/admin/catalog/{catalog identifier}" name="{catalog name}"
  type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
  <Links>
    <Link href="/admin/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
    <Link href="/organizations/{organization identifier}"
      type="application/vnd.tmrk.cloud.organization" rel="up"/>
  </Links>
  <Actions>
    <Action href="/admin/catalog/{catalog identifier}" name="remove"/>
  </Actions>
  <Tasks>
    <Task href="/tasks/{task identifier}" type="application/vnd.tmrk.cloud.task">
      <Operation>{name of action performed}</Operation>
      <Status>{Queued | Running | Failed | Success | Error}</Status>
      <ImpactedItem href="{URL of item acted upon}" name="{name of item acted upon} type="{type of
        item acted upon}"/>
      <StartTime>{time action started}</StartTime>
      <CompletedTime>{time action completed}</CompletedTime> <!-- Not present on Queued or Running -->
      <Notes>{notes on action}</Notes>
```

```
      <ErrorMessage>{error message}</ErrorMessage>
      <InitiatedBy href="/admin/users/{user identifier}" name="{{user email local part}@{user email
        domain part} | {API user family name}, {API user given name}}"
        type="application/vnd.tmrk.cloud.admin.user"/>
    </Task>
  </Tasks>
  <Status>{Active | Validated | Stopped | Failed | Completed | Validating}</Status>
  <Alerts>
    <Alert>
      <Type>{Info | Warning | Error}</Type>
      <Details>{alert detail message}</Details>
    </Alert>
      ⋮
  </Alerts>
  <Files>
    <File>
      <UploadUrl>{opaque file reference}</UploadUrl>
      <Name>upload.ovf</Name> <!-- First file is the OVF file, always this name -->
      <Size>
        <Unit>{unit of size value}</Unit>
        <Value>{file size}</Value>
      </Size>
      <BytesTransferred>{bytes uploaded}</BytesTransferred>
      <Status>{Ready | InProgress | Failed | Verified | Completed}</Status>
    </File>
      ⋮
  </Files>
  <CatalogType>{Upload | Export}</CatalogType>
</CatalogEntry>
```

EXAMPLE

```
HTTP/1.1 201 Created
  Content-Length: 959
  Content-Type: application/vnd.tmrk.cloud.admin.catalogEntry
  Location: /admin/catalog/1
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Fri, 13 Jan 2012 22:16:19 GMT

<CatalogEntry href="/admin/catalog/1" name="Catalog Item 1"
  type="application/vnd.tmrk.cloud.admin.catalogEntry" xmlns:i="http://www.w3.org/2001/XMLSchema-
  instance">
```

```
    <Links>
      <Link href="/admin/organizations/1" name="Organization 1"
        type="application/vnd.tmrk.cloud.admin.organization" rel="up"/>
      <Link href="/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization"
        rel="up"/>
    </Links>
    <Actions>
      <Action href="/admin/catalog/1" name="remove"/>
    </Actions>
    <Status>Active</Status>
    <Files>
      <File>
      <UploadUrl>http://uploads.terremark.com/1/upload.ovf</UploadUrl>
      <Name>upload.ovf</Name>
      <Size>
        <Unit>Bytes</Unit>
        <Value>0</Value>
      </Size>
      <BytesTransferred>0</BytesTransferred>
      <Status>Ready</Status>
      </File>
    </Files>
    <Configuration href="/admin/catalog/1/configuration"
      type="application/vnd.tmrk.cloud.admin.catalogEntryConfiguration"/>
    <CatalogType>Upload</CatalogType>
  </CatalogEntry>
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.7 Action Catalog File

The Action Catalog File call uploads the files that make up a catalog item. Select the <File> with the filename in the <Name> that matches the file to upload. The URL to which to post the file is specified in the <UploadUrl> of that <File> element. The request body is the binary segment of the file that matches the offset information in the Content-Range header. The call supports use of the x-tmrk-contenthash header field as described in *5.5 Header* to ensure the integrity of the byte transfer. If successful, the call returns a 201 Created header to the first message and 204 No content to subsequent messages.

Note:

- The Content-Type header field for this call must be `application/octet-stream` as described in *5.5 Header*.
- The Content-Range header field is required as described in *5.5 Header*.
- The offset specified in the Content-Range header field is zero-based.
- The total size of the message, request, headers, and body, may not exceed 5 MB.

This call is not active in the Living Specification; a file may not be uploaded to the catalog in the Living Specification.

Request

```
POST http://{URI from CatalogEntry response}
```

EXAMPLE

```
POST http://uploads.terremark.com/1/upload.ovf
```

Body

```
[Bytes to upload]
```

Response

First response:

```
HTTP/1.1 201 Created
  Content-Length: 0
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

Subsequent responses:

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

First response:

```
HTTP/1.1 201 Created
  Content-Length: 0
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 13 Jul 2011 19:47:29 GMT
```

Subsequent responses:

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
```

```
    Date: Wed, 13 Jul 2011 19:48:09 GMT
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

7.42.8 Action Catalog Remove

The Action Catalog Remove call removes a catalog item from a location. If successful, the call returns a 204 No Content response.

Note: To remove requires a catalog item to have <Status>with a value other than `Validating`.

Live Specification Test Values

Condition	Outcome
catalog identifier mod 2 = 0	Status validated
organization identifier mod 2 = 1 and location not = 3	Upload enabled

Request

```
DELETE http://{Terremark URI}/admin/catalog/{catalog identifier}
```

EXAMPLE

```
DELETE http://services.enterprisecloud.terremark.com/admin/catalog/2
```

Body

none

Response

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/{user identifier}
  x-tmrk-token: {token}
  Date: {timestamp of response}
```

EXAMPLE

```
HTTP/1.1 204 No Content
  x-tmrk-currentuser: /admin/users/101
  x-tmrk-token: cloud-F2A27F74-C04B-4566-AB53-CCC06DA2F798
  Date: Wed, 15 Jun 2011 19:47:29 GMT
```

Return to *7.42 Catalog*.

Return to *7 Application Programming Interface Reference Guide*.

8 List of Additions and Changes

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8.4 User Experience Improvements 1189

Advance to *9 Error Codes*.

Note that the numbers and names are links to the sections.

8.1 Detached Storage

Individual virtual disks may be detached from and attached to virtual machines. Detached virtual disks may be managed from the API or Infinicenter Console. Failed detach and attach operations may be retried.

Procedures

Number	Name	Comments
6.3.8	Retrieve Detached Disks	
6.3.9	Rename a Detached Disk	
6.3.10	Delete a Detached Disk	
6.3.11	Retrieve Tasks for a Detached Disk	
6.3.12	Retry a Failed Detach Disk Operation	
6.3.13	Retry a Failed Attach Disk Operation	
6.5.2	Create a Blank Server	Create a blank server with an attached disk
6.5.14	Detach a Disk from a Virtual Machine in an Environment	
6.5.15	Detach a Disk from a Virtual Machine in a Compute Pool	
6.5.16	Attach a Disk to a Virtual Machine in an Environment	
6.5.17	Attach a Disk to a Virtual Machine in a Compute Pool	
6.5.18	Retry a Failed Detach Disk Operation in an Environment	
6.5.19	Retry a Failed Detach Disk Operation in a Compute Pool	
6.5.20	Retry a Failed Attach Disk Operation in an Environment	
6.5.21	Retry a Failed Attach Disk Operation in a Compute Pool	

Calls

Number	Name	Comments
7.6.2	Get Compute Pools by ID	Link for detached disks
7.7.7	Get Resources Usage Storage	Added detached disks
7.9.2	Get Virtual Machines by ID	Actions for detached disks and pending retry element
7.9.3	Get Virtual Machines Hardware Configuration	Actions for detached disks

Number	Name	Comments
7.9.12	Action Virtual Machines Create Blank	Create a blank server with an attached disk
7.9.18	Action Virtual Machines Detach Disk	
7.9.19	Action Virtual Machines Attach Disk	
7.16	Detached Disk	New entity section
7.16.1	Get Detached Disks	
7.16.2	Get Detached Disks by ID	
7.16.3	Action Detached Disks Edit	
7.16.4	Action Detached Disks Remove	
7.17	Retry Operation	New entity section
7.17.1	Get Retry Operations Detach Disk by Virtual Machine	
7.17.2	Get Retry Operations Detach Disk by Detached Disk	
7.17.3	Get Retry Operations Attach Disk by Virtual Machine	
7.17.4	Get Retry Operations Attach Disk by Detached Disk	
7.17.5	Action Retry Operations Detach Disk by Virtual Machine	
7.17.6	Action Retry Operations Detach Disk by Detached Disk	
7.17.7	Action Retry Operations Attach Disk by Virtual Machine	
7.17.8	Action Retry Operations Attach Disk by Detached Disk	

Return to *8 List of Additions and Changes*.

8.2 Alert Notification of Real-Time Monitoring

An organization may monitor certain events within the environment and, when thresholds are crossed, have an email alert sent to a list of email addresses. The events and thresholds are system-defined: high processor or memory usage, and processor or memory bursting. The email list is user-defined. When an alert occurs, a threshold is crossed, users subscribed to that rule are notified by email of the condition.

Procedures

Number	Name	Comments
6.3.22	Retrieve Alert History	
6.3.23	Retrieve a Specified Alert	
6.3.24	Retrieve the Readings for a Specified Alert	
6.14.14	Retrieve Alert Rule Templatess	
6.14.15	Retrieve Alert Rules	
6.14.16	Create an Alert Rule	
6.14.17	Edit an Alert Rule	
6.14.18	Delete an Alert Rule	

Calls

Number	Name	Comments
7.31.1	Get Administrative Organizations	Added alert notifications
7.31.2	Get Administrative Organizations by ID	Added alert notifications
7.39	Alert	New entity section

Number	Name	Comments
7.39.1	Get Alerts Notifications	
7.39.2	Get Alerts Rules	
7.39.3	Get Alerts Rules by ID	
7.39.4	Get Alerts Rule Templates	
7.39.5	Get Alerts Rule Templates by ID	
7.39.6	Get Alerts Log	
7.39.7	Get Alerts Log by ID	
7.39.8	Get Alerts Log Events	
7.39.9	Action Alerts Create Rule	
7.39.10	Action Alerts Edit Rule	
7.39.11	Action Alerts Remove Rule	

Return to *8 List of Additions and Changes*.

8.3 Copy Virtual Machines to the VM Catalog

A virtual machine in an environment may be copied to the VM Catalog. The catalog item may be copied into an environment to create new instances of the virtual machine.

Procedures

Number	Name	Comments
6.5.7	Create a Catalog Item by Copying a Server	

Calls

Number	Name	Comments
7.9.14	Action Virtual Machines Export	
7.42.1	Get Catalog	Added element showing source
7.42.2	Get Catalog by Location	Added element showing source
7.42.3	Get Catalog by ID	Added element showing source

Return to *8 List of Additions and Changes*.

8.4 User Experience Improvements

Implements the Get Administrative Organizations call. Session persistence methods of Cookie Insert, Session Cookie, and SSL Session added for Internet services. For procedures in which the call returns a task, added a step to poll the task for the outcome of the call.

Procedures

Number	Name	Comments
6.3.3	Enable Processor Burst Mode	Added task polling
6.3.4	Enable Memory Burst Mode	Added task polling
6.3.5	Disable Processor Burst Mode	Added task polling
6.3.6	Disable Memory Burst Mode	Added task polling
6.5.8	Rename a Virtual Machine in an Environment	Added task polling

Number	Name	Comments
6.5.9	Rename a Virtual Machine in a Compute Pool	Added task polling
6.5.12	Configure a Virtual Machine in an Environment	Added task polling
6.5.13	Configure a Virtual Machine in a Compute Pool	Added task polling
6.5.22	Manage IP Addresses on a Virtual Machine in an Environment	Added task polling
6.5.23	Manage IP Addresses on a Virtual Machine in a Compute Pool	Added task polling
6.5.24	Power On a Virtual Machine in an Environment	Added task polling
6.5.25	Power On a Virtual Machine in a Compute Pool	Added task polling
6.5.26	Reboot a Virtual Machine in an Environment	Added task polling
6.5.27	Reboot a Virtual Machine in a Compute Pool	Added task polling
6.5.28	Shutdown a Virtual Machine in an Environment	Added task polling
6.5.29	Shutdown a Virtual Machine in a Compute Pool	Added task polling
6.5.30	Power Off a Virtual Machine in an Environment	Added task polling
6.5.31	Power Off a Virtual Machine in a Compute Pool	Added task polling
6.5.32	Mount VMware Tools on a Virtual Machine in an Environment	Added task polling
6.5.33	Mount VMware Tools on a Virtual Machine in a Compute Pool	Added task polling
6.5.36	Unmount VMware Tools from a Virtual Machine in an Environment	Added task polling
6.5.37	Unmount VMware Tools from a Virtual Machine in a Compute Pool	Added task polling
6.5.38	Delete a Virtual Machine from an Environment	Added task polling
6.5.39	Delete a Virtual Machine from a Compute Pool	Added task polling
6.6.5	Rename a Physical Server in an Environment	Added task polling
6.6.6	Rename a Physical Router in an Environment	Added task polling
6.6.7	Rename a High Availability Router in an Environment	Added task polling
6.6.8	Rename a Storage Device in an Environment	Added task polling
6.6.13	Manage IP Addresses on a Physical Server in an Environment	Added task polling
6.9.1	Edit a Network RNAT Association	Added task polling
6.9.4	Delete a Device RNAT Association	Added task polling
6.10.2	Edit an Internet Service	Added task polling
6.10.5	Edit a Backup Internet Service	Added task polling
6.10.6	Delete a Backup Internet Service	Added task polling
6.10.15	Enable a Monitor	Added task polling
6.10.16	Disable a Monitor	Added task polling
6.11.3	Edit a Node Service	Added task polling
6.11.4	Delete a Node Service	Added task polling
6.12.7	Edit Firewall Logging	Added task polling
6.12.8	End Firewall Logging	Added task polling
6.13.3	Edit a Trusted Network Group	Added task polling
6.13.4	Delete a Trusted Network Group	Added task polling
6.12.4	Delete a Custom Firewall Rule	Added task polling

Calls

Number	Name	Comments
7.31.1	Get Administrative Organizations	Implemented call
7.25.2	Action Internet Services Create	Added persistence methods
7.25.4	Action Internet Services Edit	Added persistence methods

Return to *8 List of Additions and Changes*.

9 Error Codes

9.1 Framework....1192
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9.5 BadRequest....1195

Advance to *10 Schema*.

Error responses return additional detail regarding the nature of the error beyond the HTTP error returned in the header. Every method call that results in an error returns the appropriate HTTP status code. Error responses include a HTML body with a textual error message (message), the HTTP error code (majorErrorCode), and a custom error code (minorErrorCode). Below are the custom error codes by category.

9.1 Framework

majorErrorCode	minorErrorCode
412	InvalidVersionSpecified,
400	OperationNotSupported,
400	RequestContentRequired,
400	RequestSerialization,
415	UnsupportedMediaType,
401	VersionHeaderRequired,
403	OperationNotAllowed

Return to *9 Error Codes*.

9.2 Common

majorErrorCode	minorErrorCode
400	InvalidInput,
400	InvalidPersona,
400	InvalidEmailWrapper,
400	CustomInvalidInput,
500	Unspecified,
501	NotImplemented,
404	ItemNotFound,
400	InvalidOperation,
409	ItemExists,
409	ItemInUse,
401	Unauthorized,
404	EntityDoesNotSupportPermissions,

majorErrorCode	minorErrorCode
409	CpuAlreadyBursting,
409	CpuNotBursting,
409	MemoryAlreadyBursting,
409	MemoryNotBursting,
409	UserAlreadyEnabled,
409	UserAlreadyDisabled,
409	UserAlreadyReset,
409	UserAlreadyUnlocked,
409	AlertNotificationAlreadyEnabled,
409	AlertNotificationAlreadyDisabled,
409	UserIsInactive,
409	UserState,
409	AlreadyInSameRowAndGroup,
409	MonitorAlreadyEnabled,
409	MonitorAlreadyDisabled,
409	VmUploadDisabled,
409	InsufficientCatalogStorage,
409	SupportAccessAlreadyEnabled,
409	SupportAccessAlreadyDisabled,
409	ContactAlreadyInvited,
409	IPAlreadyAssignedToAServer,
409	RoleAlreadyEnabled,
409	RoleAlreadyDisabled,
409	VMUploadInProgress,
409	ApiKeyAlreadyActive,
409	ApiKeyAlreadyInactive,
409	DetachDiskNotAvailable,
403	ExportOfOrphanVmNotAllowed,
409	PendingRetryOperation,
500	ScriptExecutionError

Return to *9 Error Codes*.

9.3 Application

majorErrorCode	minorErrorCode
409	InactiveResourcePool,
409	InternetServiceMonitorInvalid,
409	InternetServiceNotMonitored,
409	InternetServiceNotEmpty,
409	InternetServiceMonitorAlreadyExists,
401	InvalidGuestCredentials,
400	InvalidIPAddress,
409	NoIpAddressAvailable,

majorErrorCode	minorErrorCode
409	IpAddressAlreadyInUse,
409	IpAddressNotDetected,
409	IpAddressNotAssigned,
409	IpAddressReserveState,
400	InvalidNetworkForIp,
409	InternetServiceWithSharedNode,
409	LayoutGroupOrderInvalid,
409	LayoutGroupHasDevices,
409	LayoutRowHasGroups,
409	NodeServiceProtocolMismatch,
400	NoPublicIpsRemaining,
400	ObjectReferenced,
409	TaskInProgress,
409	PrimaryDiskImmutable,
400	PrimaryNicImmutable,
409	VirtualMachinePowerState,
409	VirtualMachineCustomizationPending,
409	VirtualMachineToolsState,
409	DmzIpAddressRequired,
409	AlertRuleAlreadyExists,
420	ActionNotRequired,
421	BurstDisabled,
403	NonApiUserRequired,
403	ApiUserRequired,
409	InvalidRowOrder,
403	MultifactorAuthenticationNotSupported,
409	NoMultifactorSeatsAvailable,
409	MultifactorConfigureState,
409	NoDefaultKey,
409	CustomizationInProgress,
409	InvalidNumberOfDisks,
409	DetachInProgress,
409	RetryOperationPending

Return to *9 Error Codes*.

9.4 Security

majorErrorCode	minorErrorCode
401	AccessKeyRequired,
401	AuthenticationRequired,
401	AuthenticationStoreNotFound,
401	AuthorizationHeaderRequired,
401	ContentSignatureMismatch,

majorErrorCode	minorErrorCode
401	DateRequired,
401	InvalidHttpVerb,
401	InvalidAuthenticationScheme,
401	InvalidAuthorizationHeader,
401	InvalidContentSignature,
401	InvalidSignature,
401	SignatureRequired,
401	SignatureTypeRequired,
401	MultifactorEnabledUserNotAllowed

Return to *9 Error Codes*.

9.5 BadRequest

majorErrorCode	minorErrorCode
400	InvalidContact,
400	InvalidName,
400	InvalidPin,
400	InvalidPassword,
400	InvalidFirstName,
400	InvalidLastName,
400	InvalidEmail,
400	InvalidPhoneNumber,
400	InvalidBackupPhone,
400	InvalidExtension,
400	InvalidBackupExtension,
400	InvalidCountryCode,
400	InvalidBackupCountryCode,
400	InvalidDescription,
400	InvalidDate,
400	InvalidStartDate,
400	InvalidEndDate,
400	InvalidDateRange,
400	InvalidMonth,
400	InvalidYear,
400	InvalidUserRole,
400	InvalidEnvironmentRole,
400	InvalidOrganizationRole,
400	InvalidNumberOfQuestionsAndAnswers,
400	InvalidNumberOfSystemAndCustomQuestions,
400	InvalidQuestion,
400	InvalidAnswer,
400	InvalidSystemQuestions,
400	InvalidCustomQuestions,

majorErrorCode	minorErrorCode
400	InvalidLayout,
400	InvalidRow,
400	InvalidGroup,
400	InvalidRowName,
400	InvalidGroupName,
400	InvalidLocation,
400	InvalidSortOption,
400	InvalidPageIndex,
400	InvalidPageSize,
400	InvalidIpAddress,
400	InvalidPublicIpAddress,
400	InvalidNetworkAdapter,
400	InvalidNetwork,
400	InvalidSourceExternalNetwork,
400	InvalidSourceExternalIpAddress,
400	InvalidSourceNetwork,
400	InvalidSourceIpAddress,
400	InvalidDestinationNetwork,
400	InvalidDestinationIpAddress,
400	InvalidDestinationExternalNetwork,
400	InvalidDestinationExternalIpAddress,
400	InvalidFirewallLogEndPoint,
400	InvalidPortNumber,
400	InvalidProtocol,
400	InvalidUrl,
400	InvalidPersistenceTimeout,
400	InvalidBackupLoadBalancerService,
400	InvalidTrustedNetworkGroup,
400	InvalidSendString,
400	InvalidReceiveString,
400	InvalidRequestUrl,
400	InvalidResponseCode,
400	InvalidMonitorInterval,
400	InvalidResponseTimeout,
400	InvalidDownTime,
400	InvalidRetryCount,
400	InvalidCustomHeader,
400	InvalidRnat,
400	InvalidDestination,
400	InvalidSource,
400	InvalidSourceEndPointType,
400	InvalidDestinationEndPointType,
400	InvalidPermission,

majorErrorCode	minorErrorCode
400	InvalidAclType,
400	InvalidQueryParameter,
400	InvalidLoginBanner,
400	InvalidRule,
400	InvalidMinCharacters,
400	InvalidMinUpperCharacters,
400	InvalidMinLowerCharacters,
400	InvalidMinNumericCharacters,
400	InvalidMinSpecialCharacters,
400	InvalidMaxConsecutiveCharactersChange,
400	InvalidMinGenerationsBeforeReuse,
400	InvalidMinLifetime,
400	InvalidCustomRulesAllowingBlankPasswords,
400	InvalidDisk,
400	InvalidTemplate,
400	InvalidMemory,
400	InvalidProcessorCount,
400	InvalidNics,
400	InvalidCustomization,
400	InvalidComputePool,
400	InvalidSshKey,
400	InvalidNetworkSetting,
400	InvalidOperatingSystem,
400	InvalidEnvironment,
400	InvalidCatalogItem,
400	InvalidPrimaryDns,
400	InvalidSecondaryDns,
400	InvalidTag,
400	InvalidFileName,
400	InvalidDeviceType,
400	InvalidBusinessOperationUnassignable,
400	InvalidBusinessOperationEntity,
400	InvalidTicketData,
400	InvalidAuthenticationLevel,
400	InvalidLoadBalancingMethod,
400	InvalidLoadBalancingPersistenceType,
400	DuplicateIpAddresses,
400	ComputePoolMismatch,
400	InvalidDetachedDiskUri,
400	AttachInProgress,
400	RetryOperationPending,
400	InvalidRecipients,
400	InvalidEmailWrapper,

majorErrorCode	minorErrorCode
400	InvalidEmailWrapperFromAddress,
400	InvalidEmailWrapperSubject,
400	InvalidEmailWrapperBody,
400	InvalidEmailTemplate,
400	InvalidEmailTemplateSubject,
400	InvalidEmailTemplateBody,
400	InvalidEmailTemplateDefaultSalutation

Return to *9 Error Codes*.

10 Schema

10.1 Message Definitions 1199

10.2 AlertRuleGroup Type Definitions....1309

10.3 Alert Status Type Definitions 1311

10.4 Basic Type Definitions....1311

Advance to *11 Call Cross-References*.

The Enterprise Cloud API is entirely based on XML messages. The XML schema description for the 2011-07-01 version of the Enterprise Cloud API follows.

10.1 Message Definitions

This schema defines the messages used by the API.

```
<?xml version="1.0" encoding="utf-8"?>
<!--XSD Transformation 2/29/2012 6:15:18 PM-->
<!--Xslt Translation-->
<!--Type Name Translation-->
<xs:schema elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import namespace="http://schemas.datacontract.org/2004/07/proxy_v20120301_Terremark.CloudApi"/>
  <xs:import namespace="http://schemas.microsoft.com/2003/10/Serialization/"/>
  <xs:complexType name="ActionType">
    <xs:sequence>
      <xs:element minOccurs="0" name="actionDisabled" nillable="true" type="ActionDisabledStatus"/>
    </xs:sequence>
    <xs:attribute name="name" type="xs:string" use="required"/>
    <xs:attribute name="href" type="xs:string" use="required"/>
    <xs:attribute name="type" type="xs:string"/>
  </xs:complexType>
  <xs:element name="Action" nillable="true" type="ActionType"/>
  <xs:simpleType name="ActionDisabledStatus">
    <xs:restriction base="xs:string">
      <xs:enumeration value="disabled"/>
      <xs:enumeration value="noAccess"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="ActionDisabledStatus" nillable="true" type="ActionDisabledStatus"/>
```

```
<xs:complexType name="ResourceType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Links" nillable="true" type="ArrayOfLinkType"/>
    <xs:element minOccurs="0" name="Actions" nillable="true" type="ArrayOfActionType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
  <xs:attribute name="href" type="xs:string"/>
  <xs:attribute name="type" type="xs:string"/>
</xs:complexType>
<xs:element name="Resource" nillable="true" type="ResourceType"/>
<xs:complexType name="ArrayOfLinkType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Link" nillable="true" type="LinkType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="LinkType">
  <xs:attribute name="name" type="xs:string"/>
  <xs:attribute name="href" type="xs:string" use="required"/>
  <xs:attribute name="type" type="xs:string"/>
  <xs:attribute name="rel" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="Link" nillable="true" type="LinkType"/>
<xs:complexType name="ArrayOfActionType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Action" nillable="true"
type="ActionType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AlertType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="AlertRuleTemplate" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="AlertSource" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="DurationInMinutes" nillable="true" type="xs:long"/>
        <xs:element minOccurs="0" name="StartTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="EndTime" nillable="true" type="xs:dateTime"/>
```

```
      <xs:element
xmlns:q1="http://schemas.datacontract.org/2004/07/proxy_v20120301_Terremark.CloudApi" minOccurs="0"
name="Status" type="q1:AlertResolutionStatus"/>
      <xs:element
xmlns:q2="http://schemas.datacontract.org/2004/07/proxy_v20120301_Terremark.CloudApi" minOccurs="0"
name="AlertType" type="q2:AlertType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Alert" nillable="true" type="AlertType"/>
<xs:complexType name="ReferenceType">
  <xs:sequence>
    <xs:element minOccurs="0" name="accessible" nillable="true" type="xs:boolean"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
  <xs:attribute name="href" type="xs:string" use="required"/>
  <xs:attribute name="type" type="xs:string"/>
</xs:complexType>
<xs:element name="Reference" nillable="true" type="ReferenceType"/>
<xs:complexType name="AlertEventType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Reading" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="EventType" type="AlertEventTypeEnum"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="AlertEvent" nillable="true" type="AlertEventType"/>
<xs:complexType name="ResourceCapacityType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Unit" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Value" type="xs:decimal"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ResourceCapacity" nillable="true" type="ResourceCapacityType"/>
<xs:simpleType name="AlertEventTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None"/>
    <xs:enumeration value="Alarm"/>
```

```
    <xs:enumeration value="StartIncident"/>
    <xs:enumeration value="InIncident"/>
    <xs:enumeration value="EndIncident"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AlertEventType" nillable="true" type="AlertEventTypeEnum"/>
<xs:complexType name="AlertEventsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfAlertEventResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="TotalCount" type="xs:int"/>
        <xs:element minOccurs="0" name="PageCount" type="xs:int"/>
        <xs:element minOccurs="0" name="CurrentPage" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertEvents" nillable="true" type="AlertEventsType"/>
<xs:complexType name="ArrayOfAlertEventResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfAlertEvent" Namespace=""/>
        <GenericParameter Name="AlertEvent" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertEvent" nillable="true"
type="AlertEventType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfAlertEventType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertEvent" nillable="true"
type="AlertEventType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AlertLogType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfAlertResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="TotalCount" type="xs:int"/>
        <xs:element minOccurs="0" name="PageCount" type="xs:int"/>
        <xs:element minOccurs="0" name="CurrentPage" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertLog" nillable="true" type="AlertLogType"/>
<xs:complexType name="ArrayOfAlertResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfAlert" Namespace=""/>
        <GenericParameter Name="Alert" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Alert" nillable="true"
type="AlertType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfAlertType">
  <xs:sequence>
```

```
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Alert" nillable="true" type="AlertType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="DetachDiskRetryOperationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="DetachedDisk" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="VirtualMachine" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DetachDiskRetryOperation" nillable="true" type="DetachDiskRetryOperationType"/>
<xs:complexType name="EnabledValueType">
  <xs:sequence>
    <xs:element name="Enabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Value" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="Unit" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="EnabledValue" nillable="true" type="EnabledValueType"/>
<xs:complexType name="EntityType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Tasks" nillable="true" type="TasksType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Entity" nillable="true" type="EntityType"/>
<xs:complexType name="TasksType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfTaskResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="TotalCount" type="xs:int"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Tasks" nillable="true" type="TasksType"/>
<xs:complexType name="ArrayOfTaskResourceType">
  <xs:annotation>
    <xs:appinfo>
     <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
      <GenericParameter Name="ArrayOfTask" Namespace=""/>
      <GenericParameter Name="Task" Namespace=""/>
     </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
     <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="Task" nillable="true" type="TaskType"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfTaskType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Task" nillable="true" type="TaskType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TaskType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
     <xs:sequence>
      <xs:element minOccurs="0" name="Operation" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Status" nillable="true" type="TaskStatus"/>
      <xs:element minOccurs="0" name="ImpactedItem" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="StartTime" nillable="true" type="xs:dateTime"/>
      <xs:element minOccurs="0" name="CompletedTime" nillable="true" type="xs:dateTime"/>
      <xs:element minOccurs="0" name="Notes" nillable="true" type="xs:string"/>
```

```
      <xs:element minOccurs="0" name="ErrorMessage" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="InitiatedBy" nillable="true" type="ReferenceType"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Task" nillable="true" type="TaskType"/>
<xs:simpleType name="TaskStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Queued"/>
    <xs:enumeration value="Running"/>
    <xs:enumeration value="Error"/>
    <xs:enumeration value="Complete"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="TaskStatus" nillable="true" type="TaskStatus"/>
<xs:complexType name="LocationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
     <xs:sequence>
      <xs:element minOccurs="0" name="FriendlyName" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Locode" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="ISO3166" nillable="true" type="xs:string"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Location" nillable="true" type="LocationType"/>
<xs:complexType name="OrganizationType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
     <xs:sequence>
      <xs:element minOccurs="0" name="Locations" nillable="true" type="LocationsType"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="Organization" nillable="true" type="OrganizationType"/>
<xs:complexType name="LocationsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Location" nillable="true"
type="OrganizationLocationType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Locations" nillable="true" type="LocationsType"/>
<xs:complexType name="OrganizationLocationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Catalog" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="Environments" nillable="true"
type="EnvironmentReferencesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="OrganizationLocation" nillable="true" type="OrganizationLocationType"/>
<xs:complexType name="EnvironmentReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Environment" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="EnvironmentReferences" nillable="true" type="EnvironmentReferencesType"/>
<xs:complexType name="OrganizationsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfOrganizationResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Organizations" nillable="true" type="OrganizationsType"/>
<xs:complexType name="ArrayOfOrganizationResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfOrganization" Namespace=""/>
```

```
      <GenericParameter Name="Organization" Namespace=""/>
     </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
     <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="Organization" nillable="true"
type="OrganizationType"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfOrganizationType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Organization" nillable="true"
type="OrganizationType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ResourceCapacityRangeType">
  <xs:sequence>
   <xs:element minOccurs="0" name="MinimumSize" nillable="true" type="ResourceCapacityType"/>
   <xs:element minOccurs="0" name="MaximumSize" nillable="true" type="ResourceCapacityType"/>
   <xs:element minOccurs="0" name="StepFactor" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ResourceCapacityRange" nillable="true" type="ResourceCapacityRangeType"/>
<xs:complexType name="SupportedVersionsType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="VersionInfo" nillable="true"
type="VersionInfoType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SupportedVersions" nillable="true" type="SupportedVersionsType"/>
<xs:complexType name="VersionInfoType">
  <xs:sequence>
   <xs:element minOccurs="0" name="Version" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Deprecated" type="xs:boolean"/>
```

```
  </xs:sequence>
</xs:complexType>
<xs:element name="VersionInfo" nillable="true" type="VersionInfoType"/>
<xs:complexType name="ThresholdType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceCapacityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="CompareType" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Threshold" nillable="true" type="ThresholdType"/>
<xs:complexType name="TimeType">
  <xs:sequence>
    <xs:element minOccurs="0" name="CurrentServerTime" type="xs:dateTime"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Time" nillable="true" type="TimeType"/>
<xs:complexType name="AdminOrganizationType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SshKeys" nillable="true" type="SshKeyReferenceListType"/>
        <xs:element minOccurs="0" name="MultifactorSummary" nillable="true"
type="MultifactorSummaryType"/>
        <xs:element minOccurs="0" name="SupportAccess" nillable="true" type="SupportAccessType"/>
        <xs:element minOccurs="0" name="PasswordComplexityRules" nillable="true"
type="PasswordComplexityRulesType"/>
        <xs:element minOccurs="0" name="LoginBanner" nillable="true" type="LoginBannerType"/>
        <xs:element minOccurs="0" name="AuthenticationLevels" nillable="true"
type="AuthenticationLevelsType"/>
        <xs:element minOccurs="0" name="AlertNotification" nillable="true"
type="AlertNotificationType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AdminOrganization" nillable="true" type="AdminOrganizationType"/>
```

```
<xs:complexType name="SshKeyReferenceListType">
  <xs:complexContent mixed="false">
    <xs:extension base="SshKeyReferencesResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SshKeyReferenceList" nillable="true" type="SshKeyReferenceListType"/>
<xs:complexType name="SshKeyReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="SshKeyReferences" Namespace=""/>
        <GenericParameter Name="SshKeyReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="SshKey" nillable="true" 
type="SshKeyReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SshKeyReferencesResource" nillable="true" type="SshKeyReferencesResourceType"/>
<xs:complexType name="SshKeyReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="SshKey" nillable="true" 
type="SshKeyReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SshKeyReferences" nillable="true" type="SshKeyReferencesType"/>
<xs:complexType name="SshKeyReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Default" nillable="true" type="xs:boolean"/>
```

```
      <xs:element minOccurs="0" name="FingerPrint" nillable="true" type="xs:string"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SshKeyReference" nillable="true" type="SshKeyReferenceType"/>
<xs:complexType name="MultifactorSummaryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Purchased" type="xs:int"/>
    <xs:element minOccurs="0" name="Used" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="MultifactorSummary" nillable="true" type="MultifactorSummaryType"/>
<xs:complexType name="SupportAccessType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Status" type="SupportAccessStatus"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SupportAccess" nillable="true" type="SupportAccessType"/>
<xs:simpleType name="SupportAccessStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Enabled"/>
    <xs:enumeration value="Disabled"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="SupportAccessStatus" nillable="true" type="SupportAccessStatus"/>
<xs:complexType name="PasswordComplexityRulesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element name="RuleType" type="PasswordComplexityRuleTypeEnum"/>
        <xs:element minOccurs="0" name="CustomRules" nillable="true" type="CustomPasswordRulesType"/>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PasswordComplexityRules" nillable="true" type="PasswordComplexityRulesType"/>
<xs:simpleType name="PasswordComplexityRuleTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Default"/>
    <xs:enumeration value="Custom"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="PasswordComplexityRuleType" nillable="true"
type="PasswordComplexityRuleTypeEnum"/>
<xs:complexType name="CustomPasswordRulesType">
  <xs:sequence>
    <xs:element name="MinimumCharacters" nillable="true" type="EnabledValueType"/>
    <xs:element name="MinimumUpperCaseCharacters" nillable="true" type="EnabledValueType"/>
    <xs:element name="MinimumLowerCaseCharacters" nillable="true" type="EnabledValueType"/>
    <xs:element name="MinimumNumericCharacters" nillable="true" type="EnabledValueType"/>
    <xs:element name="MinimumSpecialCharacters" nillable="true" type="EnabledValueType"/>
    <xs:element name="MaximumConsecutiveCharactersFromPriorPassword" nillable="true"
type="EnabledValueType"/>
    <xs:element name="MinimumLifetimeRestriction" nillable="true" type="EnabledValueType"/>
    <xs:element name="MinimumGenerationsBeforeReuse" nillable="true" type="EnabledValueType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CustomPasswordRules" nillable="true" type="CustomPasswordRulesType"/>
<xs:complexType name="LoginBannerType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element name="Display" type="xs:boolean"/>
        <xs:element minOccurs="0" name="Text" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="LoginBanner" nillable="true" type="LoginBannerType"/>
```

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<xs:complexType name="AuthenticationLevelsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element name="BasicEnabled" type="xs:boolean"/>
        <xs:element name="HMACSHA1Enabled" type="xs:boolean"/>
        <xs:element name="HMACSHA256Enabled" type="xs:boolean"/>
        <xs:element name="HMACSHA512Enabled" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AuthenticationLevels" nillable="true" type="AuthenticationLevelsType"/>
<xs:complexType name="AlertNotificationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="AlertRules" nillable="true" type="AlertRulesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertNotification" nillable="true" type="AlertNotificationType"/>
<xs:complexType name="AlertRulesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfAlertRuleResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertRules" nillable="true" type="AlertRulesType"/>
<xs:complexType name="ArrayOfAlertRuleResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfAlertRule" Namespace=""/>
        <GenericParameter Name="AlertRule" Namespace=""/>
      </GenericType>
    </xs:appinfo>
```

```
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertRule" nillable="true"
type="AlertRuleType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfAlertRuleType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertRule" nillable="true"
type="AlertRuleType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AlertRuleType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="AlertRuleTemplate" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="RuleGroup" type="AlertRuleGroup"/>
        <xs:element minOccurs="0" name="Threshold" nillable="true" type="ThresholdType"/>
        <xs:element minOccurs="0" name="RuleAction" type="AlertRuleAction"/>
        <xs:element minOccurs="0" name="Configuration" nillable="true" type="ConfigurationType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertRule" nillable="true" type="AlertRuleType"/>
<xs:simpleType name="AlertRuleGroup">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None"/>
    <xs:enumeration value="Resources"/>
    <xs:enumeration value="Cloud"/>
    <xs:enumeration value="Billing"/>
    <xs:enumeration value="Devices"/>
  </xs:restriction>
```

```
</xs:simpleType>
<xs:element name="AlertRuleGroup" nillable="true" type="AlertRuleGroup"/>
<xs:simpleType name="AlertRuleAction">
  <xs:restriction base="xs:string">
    <xs:enumeration value="DoNotMonitor"/>
    <xs:enumeration value="LogOnly"/>
    <xs:enumeration value="NotifyByEmail"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AlertRuleAction" nillable="true" type="AlertRuleAction"/>
<xs:complexType name="ConfigurationType">
  <xs:sequence>
    <xs:element minOccurs="0" name="EmailConfiguration" nillable="true"
type="NotifyByEmailConfigurationType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Configuration" nillable="true" type="ConfigurationType"/>
<xs:complexType name="NotifyByEmailConfigurationType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Recipients" nillable="true" type="RecipientsType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NotifyByEmailConfiguration" nillable="true"
type="NotifyByEmailConfigurationType"/>
<xs:complexType name="RecipientsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Recipient" nillable="true"
type="RecipientType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Recipients" nillable="true" type="RecipientsType"/>
<xs:complexType name="RecipientType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element name="Email" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Recipient" nillable="true" type="RecipientType"/>
```

```
<xs:complexType name="AdminOrganizationsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfAdminOrganizationResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AdminOrganizations" nillable="true" type="AdminOrganizationsType"/>
<xs:complexType name="ArrayOfAdminOrganizationResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfAdminOrganization" Namespace=""/>
        <GenericParameter Name="AdminOrganization" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="AdminOrganization" nillable="true" 
type="AdminOrganizationType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfAdminOrganizationType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AdminOrganization" nillable="true" 
type="AdminOrganizationType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AlertRuleTemplateType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="RuleGroup" type="AlertRuleGroup"/>
        <xs:element minOccurs="0" name="Threshold" nillable="true" type="ThresholdType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertRuleTemplate" nillable="true" type="AlertRuleTemplateType"/>
<xs:complexType name="AlertRuleTemplatesType">
  <xs:complexContent mixed="false">
   <xs:extension base="ArrayOfAlertRuleTemplateResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AlertRuleTemplates" nillable="true" type="AlertRuleTemplatesType"/>
<xs:complexType name="ArrayOfAlertRuleTemplateResourceType">
  <xs:annotation>
   <xs:appinfo>
    <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
     <GenericParameter Name="ArrayOfAlertRuleTemplate" Namespace=""/>
     <GenericParameter Name="AlertRuleTemplate" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertRuleTemplate" nillable="true"
type="AlertRuleTemplateType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfAlertRuleTemplateType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="AlertRuleTemplate" nillable="true"
type="AlertRuleTemplateType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ApiKeyType">
  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="AccessKey" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Status" type="ApiKeyStatus"/>
        <xs:element minOccurs="0" name="PrivateKey" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ApiKey" nillable="true" type="ApiKeyType"/>
<xs:simpleType name="ApiKeyStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Active"/>
    <xs:enumeration value="Inactive"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="ApiKeyStatus" nillable="true" type="ApiKeyStatus"/>
<xs:complexType name="ApiKeysType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfApiKeyResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ApiKeys" nillable="true" type="ApiKeysType"/>
<xs:complexType name="ArrayOfApiKeyResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfApiKey" Namespace=""/>
        <GenericParameter Name="ApiKey" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="ApiKey" nillable="true" 
type="ApiKeyType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfApiKeyType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="ApiKey" nillable="true"
type="ApiKeyType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AuditLogType">
  <xs:complexContent mixed="false">
   <xs:extension base="ArrayOfAuditLogItemResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" name="TotalCount" type="xs:int"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AuditLog" nillable="true" type="AuditLogType"/>
<xs:complexType name="ArrayOfAuditLogItemResourceType">
  <xs:annotation>
   <xs:appinfo>
    <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
     <GenericParameter Name="ArrayOfAuditLogItem" Namespace=""/>
     <GenericParameter Name="AuditLogItem" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="AuditLogItem" nillable="true"
type="AuditLogItemType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
```

```
</xs:complexType>
<xs:complexType name="ArrayOfAuditLogItemType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="AuditLogItem" nillable="true"
type="AuditLogItemType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AuditLogItemType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="User" nillable="true" type="UserReferenceType"/>
    <xs:element minOccurs="0" name="Action" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Details" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Origin" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="SourceIp" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Notes" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="AuditLogItem" nillable="true" type="AuditLogItemType"/>
<xs:complexType name="UserReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="UserReference" nillable="true" type="UserReferenceType"/>
<xs:complexType name="HistoricalUsageType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Month" type="xs:int"/>
    <xs:element minOccurs="0" name="Year" type="xs:int"/>
    <xs:element minOccurs="0" name="Billable" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Burst" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Total" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
```

```
</xs:complexType>
<xs:element name="HistoricalUsage" nillable="true" type="HistoricalUsageType"/>
<xs:complexType name="BandwidthIpAddressUsageType">
  <xs:sequence>
    <xs:element minOccurs="0" name="In" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Out" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
</xs:complexType>
<xs:element name="BandwidthIpAddressUsage" nillable="true" type="BandwidthIpAddressUsageType"/>
<xs:complexType name="BandwidthIpAddressUsagesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="BandwidthIpAddressUsageType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="BandwidthIpAddressUsages" nillable="true" type="BandwidthIpAddressUsagesType"/>
<xs:complexType name="BandwidthPeriodsType">
  <xs:complexContent mixed="false">
    <xs:extension base="BandwidthPeriodReferencesResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BandwidthPeriods" nillable="true" type="BandwidthPeriodsType"/>
<xs:complexType name="BandwidthPeriodReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="BandwidthPeriodReferences" Namespace=""/>
        <GenericParameter Name="Reference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="BandwidthPeriod" nillable="true"
type="ReferenceType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BandwidthPeriodReferencesResource" nillable="true"
type="BandwidthPeriodReferencesResourceType"/>
<xs:complexType name="BandwidthPeriodReferencesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="BandwidthPeriod" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="BandwidthPeriodReferences" nillable="true" type="BandwidthPeriodReferencesType"/>
<xs:complexType name="BandwidthTotalUsageType">
  <xs:sequence>
   <xs:element minOccurs="0" name="Billable" nillable="true" type="ResourceCapacityType"/>
   <xs:element minOccurs="0" name="Burst" nillable="true" type="ResourceCapacityType"/>
   <xs:element minOccurs="0" name="In" nillable="true" type="ResourceCapacityType"/>
   <xs:element minOccurs="0" name="Out" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="BandwidthTotalUsage" nillable="true" type="BandwidthTotalUsageType"/>
<xs:complexType name="BandwidthUsageType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" name="TotalUsage" nillable="true" type="BandwidthTotalUsageType"/>
     <xs:element minOccurs="0" name="IpStatistics" nillable="true"
type="BandwidthIpAddressUsagesType"/>
     <xs:element minOccurs="0" name="HistoricalUsages" nillable="true"
type="ArrayOfHistoricalUsageType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BandwidthUsage" nillable="true" type="BandwidthUsageType"/>
<xs:complexType name="ArrayOfHistoricalUsageType">
  <xs:sequence>
```

```
  <xs:element minOccurs="0" maxOccurs="unbounded" name="HistoricalUsage" nillable="true"
type="HistoricalUsageType"/>
 </xs:sequence>
</xs:complexType>
<xs:complexType name="BusinessOperationType">
 <xs:complexContent mixed="false">
  <xs:extension base="ResourceType">
   <xs:sequence>
    <xs:element minOccurs="0" name="BusinessOperationType" type="BusinessOperationTypeEnum"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="IsAssignable" type="xs:boolean"/>
   </xs:sequence>
  </xs:extension>
 </xs:complexContent>
</xs:complexType>
<xs:element name="BusinessOperation" nillable="true" type="BusinessOperationType"/>
<xs:simpleType name="BusinessOperationTypeEnum">
 <xs:restriction base="xs:string">
  <xs:enumeration value="Organization"/>
  <xs:enumeration value="Environment"/>
 </xs:restriction>
</xs:simpleType>
<xs:element name="BusinessOperationType" nillable="true" type="BusinessOperationTypeEnum"/>
<xs:complexType name="BusinessOperationReferencesType">
 <xs:sequence>
  <xs:element minOccurs="0" maxOccurs="unbounded" name="BusinessOperation" nillable="true"
type="ReferenceType"/>
 </xs:sequence>
</xs:complexType>
<xs:element name="BusinessOperationReferences" nillable="true"
type="BusinessOperationReferencesType"/>
<xs:complexType name="BusinessOperationsType">
 <xs:complexContent mixed="false">
  <xs:extension base="ArrayOfBusinessOperationResourceType"/>
 </xs:complexContent>
</xs:complexType>
<xs:element name="BusinessOperations" nillable="true" type="BusinessOperationsType"/>
<xs:complexType name="ArrayOfBusinessOperationResourceType">
```

```
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfBusinessOperation" Namespace=""/>
        <GenericParameter Name="BusinessOperation" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="BusinessOperation" nillable="true" 
type="BusinessOperationType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfBusinessOperationType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="BusinessOperation" nillable="true" 
type="BusinessOperationType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ContactType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="EmailAddress" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Contact" nillable="true" type="ContactType"/>
<xs:complexType name="ContactsType">
  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ArrayOfContactResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Contacts" nillable="true" type="ContactsType"/>
<xs:complexType name="ArrayOfContactResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfContact" Namespace=""/>
        <GenericParameter Name="Contact" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Contact" nillable="true" 
type="ContactType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfContactType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Contact" nillable="true" 
type="ContactType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="CreateApiKeyType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateApiKey" nillable="true" type="CreateApiKeyType"/>
<xs:complexType name="CreateApiUserType">
  <xs:sequence>
    <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
```

```
    <xs:element name="UserRole" nillable="true" type="UserRoleType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateApiUser" nillable="true" type="CreateApiUserType"/>
<xs:complexType name="UserRoleType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="OrganizationRole" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="EnvironmentRoles" nillable="true"
type="ArrayOfEnvironmentRoleType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="UserRole" nillable="true" type="UserRoleType"/>
<xs:complexType name="ArrayOfEnvironmentRoleType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="EnvironmentRole" nillable="true"
type="EnvironmentRoleType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="EnvironmentRoleType">
  <xs:sequence>
    <xs:element name="Environment" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="Role" nillable="true" type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="EnvironmentRole" nillable="true" type="EnvironmentRoleType"/>
<xs:complexType name="CreateRoleType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Active" type="xs:boolean"/>
    <xs:element minOccurs="0" name="RoleType" type="RoleTypeEnum"/>
    <xs:element minOccurs="0" name="BusinessOperations" nillable="true"
type="BusinessOperationReferencesType"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="CreateRole" nillable="true" type="CreateRoleType"/>
<xs:simpleType name="RoleTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Organization"/>
    <xs:enumeration value="Environment"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="RoleType" nillable="true" type="RoleTypeEnum"/>
<xs:complexType name="CreateSshKeyType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Default" nillable="true" type="xs:boolean"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateSshKey" nillable="true" type="CreateSshKeyType"/>
<xs:complexType name="CreateTicketType">
  <xs:sequence>
    <xs:element name="Email" nillable="true" type="xs:string"/>
    <xs:element name="Subject" nillable="true" type="xs:string"/>
    <xs:element name="Details" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateTicket" nillable="true" type="CreateTicketType"/>
<xs:complexType name="CreateUserType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Contact" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
    <xs:element name="Password" nillable="true" type="xs:string"/>
    <xs:element name="UserRole" nillable="true" type="UserRoleType"/>
    <xs:element name="UserSecurityQuestions" nillable="true" type="SecurityQuestionsType"/>
    <xs:element minOccurs="0" name="MultifactorAuthentication" nillable="true"
type="MultifactorAuthenticationType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
</xs:complexType>
<xs:element name="CreateUser" nillable="true" type="CreateUserType"/>
<xs:complexType name="SecurityQuestionsType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="SecurityQuestion" nillable="true"
type="SecurityQuestionType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SecurityQuestions" nillable="true" type="SecurityQuestionsType"/>
<xs:complexType name="SecurityQuestionType">
  <xs:sequence>
    <xs:element name="Question" nillable="true" type="xs:string"/>
    <xs:element name="Answer" nillable="true" type="xs:string"/>
    <xs:element name="IsCustom" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SecurityQuestion" nillable="true" type="SecurityQuestionType"/>
<xs:complexType name="MultifactorAuthenticationType">
  <xs:sequence>
    <xs:element name="CountryCode" type="xs:int"/>
    <xs:element name="PrimaryPhone" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="PrimaryExtension" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="BackupCountryCode" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="BackupPhone" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="BackupExtension" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Pin" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="MultifactorAuthentication" nillable="true" type="MultifactorAuthenticationType"/>
<xs:complexType name="DeviceTagType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DeviceTag" nillable="true" type="DeviceTagType"/>
<xs:complexType name="DeviceTagListType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfDeviceTagResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DeviceTagList" nillable="true" type="DeviceTagListType"/>
```

```
<xs:complexType name="ArrayOfDeviceTagResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfDeviceTag" Namespace=""/>
        <GenericParameter Name="DeviceTag" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="DeviceTag" nillable="true" 
type="DeviceTagType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfDeviceTagType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="DeviceTag" nillable="true" 
type="DeviceTagType"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="EnvironmentAccessLevel">
  <xs:restriction base="xs:string">
    <xs:enumeration value="NoAccess"/>
    <xs:enumeration value="ReadOnly"/>
    <xs:enumeration value="User"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="EnvironmentAccessLevel" nillable="true" type="EnvironmentAccessLevel"/>
<xs:complexType name="InviteUserType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Contact" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
```

```
    <xs:element name="UserRole" nillable="true" type="UserRoleType"/>
    <xs:element minOccurs="0" name="MultifactorAuthentication" nillable="true"
type="MultifactorAuthenticationType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
</xs:complexType>
<xs:element name="InviteUser" nillable="true" type="InviteUserType"/>
<xs:complexType name="LifetimeRestrictionType">
  <xs:sequence>
    <xs:element name="Unit" nillable="true" type="xs:string"/>
    <xs:element name="Value" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="LifetimeRestriction" nillable="true" type="LifetimeRestrictionType"/>
<xs:complexType name="QuestionListType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Question" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="QuestionList" nillable="true" type="QuestionListType"/>
<xs:complexType name="QuestionsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Question" nillable="true"
type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Questions" nillable="true" type="QuestionsType"/>
<xs:complexType name="RoleType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="RoleType" type="RoleTypeEnum"/>
        <xs:element minOccurs="0" name="Active" type="xs:boolean"/>
```

```
      <xs:element minOccurs="0" name="Category" type="RoleCategory"/>
      <xs:element minOccurs="0" name="IsAdminRole" type="xs:boolean"/>
      <xs:element minOccurs="0" name="BusinessOperations" nillable="true"
type="BusinessOperationReferencesType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Role" nillable="true" type="RoleType"/>
<xs:simpleType name="RoleCategory">
  <xs:restriction base="xs:string">
    <xs:enumeration value="System"/>
    <xs:enumeration value="Custom"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="RoleCategory" nillable="true" type="RoleCategory"/>
<xs:complexType name="RoleReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="RoleType" type="RoleTypeEnum"/>
        <xs:element minOccurs="0" name="Active" type="xs:boolean"/>
        <xs:element minOccurs="0" name="Category" type="RoleCategory"/>
        <xs:element minOccurs="0" name="IsAdminRole" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="RoleReference" nillable="true" type="RoleReferenceType"/>
<xs:complexType name="RolesType">
  <xs:complexContent mixed="false">
    <xs:extension base="RoleReferencesResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Roles" nillable="true" type="RolesType"/>
<xs:complexType name="RoleReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
```

```
    <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
      <GenericParameter Name="RoleReferences" Namespace=""/>
      <GenericParameter Name="RoleReference" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="Role" nillable="true"
type="RoleReferenceType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="RoleReferencesResource" nillable="true" type="RoleReferencesResourceType"/>
<xs:complexType name="RoleReferencesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Role" nillable="true"
type="RoleReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="RoleReferences" nillable="true" type="RoleReferencesType"/>
<xs:complexType name="SshKeyType">
  <xs:complexContent mixed="false">
   <xs:extension base="EntityType">
    <xs:sequence>
     <xs:element minOccurs="0" name="Default" nillable="true" type="xs:boolean"/>
     <xs:element minOccurs="0" name="FingerPrint" nillable="true" type="xs:string"/>
     <xs:element minOccurs="0" name="PrivateKey" nillable="true" type="xs:string"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SshKey" nillable="true" type="SshKeyType"/>
<xs:complexType name="SshKeysType">
  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ArrayOfSshKeyResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="SshKeys" nillable="true" type="SshKeysType"/>
<xs:complexType name="ArrayOfSshKeyResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfSshKey" Namespace=""/>
        <GenericParameter Name="SshKey" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="SshKey" nillable="true" 
type="SshKeyType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfSshKeyType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="SshKey" nillable="true" 
type="SshKeyType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TicketType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Id" type="xs:int"/>
        <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="Status" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Category" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="DetectedBy" nillable="true" type="xs:string"/>
```

```
      <xs:element minOccurs="0" name="Severity" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Device" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Classification" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Owner" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Information" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Solution" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="History" nillable="true"
type="ArrayOfTicketHistoryItemType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Ticket" nillable="true" type="TicketType"/>
<xs:complexType name="ArrayOfTicketHistoryItemType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="TicketHistoryItem" nillable="true"
type="TicketHistoryItemType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TicketHistoryItemType">
  <xs:sequence>
   <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
   <xs:element minOccurs="0" name="Subject" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Information" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TicketHistoryItem" nillable="true" type="TicketHistoryItemType"/>
<xs:complexType name="TicketGroupsType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="Active" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="History" nillable="true" type="ReferenceType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="TicketGroups" nillable="true" type="TicketGroupsType"/>
<xs:complexType name="TicketsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfTicketReferenceResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Tickets" nillable="true" type="TicketsType"/>
<xs:complexType name="ArrayOfTicketReferenceResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfTicketReference" Namespace=""/>
        <GenericParameter Name="TicketReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="TicketReference" nillable="true" 
type="TicketReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfTicketReferenceType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TicketReference" nillable="true" 
type="TicketReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TicketReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Id" type="xs:int"/>
        <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
```

```
      <xs:element minOccurs="0" name="Severity" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Status" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Device" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:extension>
 </xs:complexContent>
</xs:complexType>
<xs:element name="TicketReference" nillable="true" type="TicketReferenceType"/>
<xs:complexType name="UserType">
 <xs:complexContent mixed="false">
  <xs:extension base="EntityType">
   <xs:sequence>
    <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Email" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Status" type="UserStatus"/>
    <xs:element minOccurs="0" name="LoginStatus" type="UserLoginStatus"/>
    <xs:element minOccurs="0" name="LastLogin" nillable="true" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="UserRole" nillable="true" type="UserRoleType"/>
    <xs:element minOccurs="0" name="MultifactorAuthentication" nillable="true"
type="MultifactorAuthenticationType"/>
    <xs:element minOccurs="0" name="IsAdministrator" type="xs:boolean"/>
    <xs:element minOccurs="0" name="IsApiUser" type="xs:boolean"/>
    <xs:element minOccurs="0" name="IsAlertNotificationEnabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="IsMultifactorAuthenticationEnabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="ApiKeys" nillable="true" type="ApiKeysType"/>
   </xs:sequence>
  </xs:extension>
 </xs:complexContent>
</xs:complexType>
<xs:element name="User" nillable="true" type="UserType"/>
<xs:simpleType name="UserStatus">
 <xs:restriction base="xs:string">
  <xs:enumeration value="Active"/>
  <xs:enumeration value="Inactive"/>
 </xs:restriction>
</xs:simpleType>
```

```
<xs:element name="UserStatus" nillable="true" type="UserStatus"/>
<xs:simpleType name="UserLoginStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Active"/>
    <xs:enumeration value="LockedOut"/>
    <xs:enumeration value="AccountReset"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="UserLoginStatus" nillable="true" type="UserLoginStatus"/>
<xs:complexType name="UserCredentialsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="FirstName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="LastName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Password" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="UserSecurityQuestions" nillable="true"
type="SecurityQuestionsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="UserCredentials" nillable="true" type="UserCredentialsType"/>
<xs:complexType name="UserReferencesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfUserReferenceResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="UserReferences" nillable="true" type="UserReferencesType"/>
<xs:complexType name="ArrayOfUserReferenceResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfUserReference" Namespace=""/>
        <GenericParameter Name="UserReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
```

```
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="UserReference" nillable="true"
type="UserReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfUserReferenceType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="UserReference" nillable="true"
type="UserReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="UserRoleTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Administrator"/>
    <xs:enumeration value="Other"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="UserRoleType" nillable="true" type="UserRoleTypeEnum"/>
<xs:complexType name="UsersType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfUserResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Users" nillable="true" type="UsersType"/>
<xs:complexType name="ArrayOfUserResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfUser" Namespace=""/>
        <GenericParameter Name="User" Namespace=""/>
      </GenericType>
    </xs:appinfo>
```

```
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="User" nillable="true" type="UserType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfUserType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="User" nillable="true" type="UserType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="EnvironmentType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="ComputePools" nillable="true"
type="ComputePoolReferencesType"/>
        <xs:element minOccurs="0" name="Networks" nillable="true" type="NetworkReferencesType"/>
        <xs:element minOccurs="0" name="PhysicalDevices" nillable="true"
type="PhysicalDeviceReferencesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Environment" nillable="true" type="EnvironmentType"/>
<xs:complexType name="ComputePoolReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ComputePool" nillable="true"
type="ComputePoolReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputePoolReferences" nillable="true" type="ComputePoolReferencesType"/>
<xs:complexType name="ComputePoolReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="VirtualMachineReferencesType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolReference" nillable="true" type="ComputePoolReferenceType"/>
<xs:complexType name="VirtualMachineReferencesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true"
type="VirtualMachineReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="VirtualMachineReferences" nillable="true" type="VirtualMachineReferencesType"/>
<xs:complexType name="VirtualMachineReferenceType">
  <xs:complexContent mixed="false">
   <xs:extension base="ReferenceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="Status" type="VirtualMachineStatus"/>
      <xs:element minOccurs="0" name="ProcessorCount" nillable="true" type="xs:int"/>
      <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
      <xs:element minOccurs="0" name="Storage" nillable="true" type="ResourceCapacityType"/>
      <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="PoweredOn" nillable="true" type="xs:boolean"/>
      <xs:element minOccurs="0" name="ToolsStatus" nillable="true" type="ToolsStatus"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachineReference" nillable="true" type="VirtualMachineReferenceType"/>
<xs:simpleType name="VirtualMachineStatus">
  <xs:restriction base="xs:string">
   <xs:enumeration value="NotDeployed"/>
   <xs:enumeration value="Deployed"/>
   <xs:enumeration value="Orphaned"/>
   <xs:enumeration value="TaskInProgress"/>
   <xs:enumeration value="CopyInProgress"/>
```

```
  </xs:restriction>
</xs:simpleType>
<xs:element name="VirtualMachineStatus" nillable="true" type="VirtualMachineStatus"/>
<xs:simpleType name="ToolsStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="NotInstalled"/>
    <xs:enumeration value="NotRunning"/>
    <xs:enumeration value="OutOfDate"/>
    <xs:enumeration value="Current"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="ToolsStatus" nillable="true" type="ToolsStatus"/>
<xs:complexType name="NetworkReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="NetworkReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkReferences" nillable="true" type="NetworkReferencesType"/>
<xs:complexType name="NetworkReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="NetworkType" type="NetworkTypeEnum"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkReference" nillable="true" type="NetworkReferenceType"/>
<xs:simpleType name="NetworkTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Dmz"/>
    <xs:enumeration value="Internal"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="NetworkType" nillable="true" type="NetworkTypeEnum"/>
<xs:complexType name="PhysicalDeviceReferencesType">
  <xs:sequence>
```

```
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PhysicalDevice" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PhysicalDeviceReferences" nillable="true" type="PhysicalDeviceReferencesType"/>
<xs:complexType name="EnvironmentsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfEnvironmentResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Environments" nillable="true" type="EnvironmentsType"/>
<xs:complexType name="ArrayOfEnvironmentResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfEnvironment" Namespace=""/>
        <GenericParameter Name="Environment" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Environment" nillable="true"
type="EnvironmentType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfEnvironmentType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Environment" nillable="true"
type="EnvironmentType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="TaskListType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfTaskResourceType"/>
```

```
  </xs:complexContent>
</xs:complexType>
<xs:element name="TaskList" nillable="true" type="TaskListType"/>
<xs:complexType name="CreateLayoutGroupType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Row" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="NewRowName" nillable="true" type="xs:string"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateLayoutGroup" nillable="true" type="CreateLayoutGroupType"/>
<xs:complexType name="CreateLayoutRowType">
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateLayoutRow" nillable="true" type="CreateLayoutRowType"/>
<xs:complexType name="DeviceType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Tags" nillable="true" type="TagsType"/>
        <xs:element minOccurs="0" name="Layout" nillable="true" type="LayoutReferenceType"/>
        <xs:element minOccurs="0" name="NetworkHost" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Device" nillable="true" type="DeviceType"/>
<xs:complexType name="TagsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Tag" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Tags" nillable="true" type="TagsType"/>
<xs:complexType name="LayoutReferenceType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Row" nillable="true" type="ReferenceType"/>
```

```
    <xs:element minOccurs="0" name="Group" nillable="true" type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="LayoutReference" nillable="true" type="LayoutReferenceType"/>
<xs:complexType name="PhysicalServerType">
  <xs:complexContent mixed="false">
    <xs:extension base="PhysicalDeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SerialNumber" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="LightsOutIp" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="AssignedIpAddresses" nillable="true"
type="AssignedIpAddressesType"/>
        <xs:element minOccurs="0" name="LicensedSoftware" nillable="true"
type="PhysicalDeviceLicensedSoftwareType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PhysicalServer" nillable="true" type="PhysicalServerType"/>
<xs:complexType name="PhysicalDeviceType">
  <xs:complexContent mixed="false">
    <xs:extension base="DeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Classification" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Model" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PhysicalDevice" nillable="true" type="PhysicalDeviceType"/>
<xs:complexType name="StorageDeviceType">
  <xs:complexContent mixed="false">
    <xs:extension base="PhysicalDeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SerialNumber" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="AssignedIpAddresses" nillable="true"
type="AssignedIpAddressesType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="StorageDevice" nillable="true" type="StorageDeviceType"/>
<xs:complexType name="AssignedIpAddressesType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" name="Networks" nillable="true" type="DeviceNetworksType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AssignedIpAddresses" nillable="true" type="AssignedIpAddressesType"/>
<xs:complexType name="DeviceNetworksType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="DeviceNetworkType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="DeviceNetworks" nillable="true" type="DeviceNetworksType"/>
<xs:complexType name="DeviceNetworkType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" name="IpAddresses" nillable="true" type="DeviceIpsType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DeviceNetwork" nillable="true" type="DeviceNetworkType"/>
<xs:complexType name="DeviceIpsType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="DeviceIps" nillable="true" type="DeviceIpsType"/>
<xs:complexType name="PhysicalRouterType">
  <xs:complexContent mixed="false">
    <xs:extension base="PhysicalDeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SerialNumber" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="OutsideIp" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="InsideIp" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PhysicalRouter" nillable="true" type="PhysicalRouterType"/>
<xs:complexType name="HighAvailabilityRouterType">
  <xs:complexContent mixed="false">
    <xs:extension base="PhysicalDeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="OutsideIp" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="InsideIp" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Devices" nillable="true" type="DevicesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="HighAvailabilityRouter" nillable="true" type="HighAvailabilityRouterType"/>
<xs:complexType name="DevicesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Device" nillable="true"
type="PhysicalRouterDeviceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Devices" nillable="true" type="DevicesType"/>
<xs:complexType name="PhysicalRouterDeviceType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Model" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="SerialNumber" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="OutsideIp" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="InsideIp" nillable="true" type="xs:string"/>
```

```
  </xs:sequence>
</xs:complexType>
<xs:element name="PhysicalRouterDevice" nillable="true" type="PhysicalRouterDeviceType"/>
<xs:complexType name="VirtualMachineType">
  <xs:complexContent mixed="false">
    <xs:extension base="DeviceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Status" nillable="true" type="VirtualMachineStatus"/>
        <xs:element minOccurs="0" name="PoweredOn" nillable="true" type="xs:boolean"/>
        <xs:element minOccurs="0" name="HardwareConfiguration" nillable="true"
type="HardwareConfigurationType"/>
        <xs:element minOccurs="0" name="IpAddresses" nillable="true"
type="VirtualMachineIpAddressesType"/>
        <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="ToolsStatus" nillable="true" type="ToolsStatus"/>
        <xs:element minOccurs="0" name="MediaStatus" nillable="true"
type="VirtualMachineMediaStatus"/>
        <xs:element minOccurs="0" name="CustomizationPending" nillable="true" type="xs:boolean"/>
        <xs:element minOccurs="0" name="PendingRetryOperation" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachine" nillable="true" type="VirtualMachineType"/>
<xs:complexType name="HardwareConfigurationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="ProcessorCount" type="xs:int"/>
        <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="Disks" nillable="true" type="DisksType"/>
        <xs:element minOccurs="0" name="Nics" nillable="true" type="NicsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="HardwareConfiguration" nillable="true" type="HardwareConfigurationType"/>
<xs:complexType name="DisksType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Disk" nillable="true"
type="VirtualDiskType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Disks" nillable="true" type="DisksType"/>
<xs:complexType name="VirtualDiskType">
  <xs:complexContent mixed="false">
    <xs:extension base="VirtualDiskBaseType">
      <xs:sequence>
        <xs:element name="Size" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualDisk" nillable="true" type="VirtualDiskType"/>
<xs:complexType name="VirtualDiskBaseType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Index" nillable="true" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="VirtualDiskBase" nillable="true" type="VirtualDiskBaseType"/>
<xs:complexType name="NicsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Nic" nillable="true"
type="VirtualNicType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Nics" nillable="true" type="NicsType"/>
<xs:complexType name="VirtualNicType">
  <xs:sequence>
    <xs:element minOccurs="0" name="UnitNumber" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="MacAddress" nillable="true" type="xs:string"/>
    <xs:element name="Network" nillable="true" type="NetworkReferenceType"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="VirtualNic" nillable="true" type="VirtualNicType"/>
<xs:complexType name="VirtualMachineIpAddressesType">
  <xs:sequence>
    <xs:element minOccurs="0" name="AssignedIpAddresses" nillable="true"
type="AssignedIpAddressesType"/>
    <xs:element minOccurs="0" name="DetectedIpAddresses" nillable="true" type="DeviceIpsType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="VirtualMachineIpAddresses" nillable="true" type="VirtualMachineIpAddressesType"/>
<xs:simpleType name="VirtualMachineMediaStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Unmounted"/>
    <xs:enumeration value="Mounted"/>
    <xs:enumeration value="IsoMounted"/>
    <xs:enumeration value="VmwareToolsMounted"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="VirtualMachineMediaStatus" nillable="true" type="VirtualMachineMediaStatus"/>
<xs:complexType name="PhysicalDeviceLicensedSoftwareType">
  <xs:sequence>
    <xs:element minOccurs="0" name="HourlyLicensedSoftware" nillable="true"
type="ArrayOfPhysicalServerSoftwareEntryType"/>
    <xs:element minOccurs="0" name="LicenseProvider" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="MonthlyLicensedSoftware" nillable="true"
type="ArrayOfPhysicalServerSoftwareEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PhysicalDeviceLicensedSoftware" nillable="true"
type="PhysicalDeviceLicensedSoftwareType"/>
<xs:complexType name="ArrayOfPhysicalServerSoftwareEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PhysicalServerSoftwareEntry"
nillable="true" type="PhysicalServerSoftwareEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="PhysicalServerSoftwareEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LicenseCount" type="xs:int"/>
```

```
    <xs:element minOccurs="0" name="CostPerUnit" type="xs:decimal"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PhysicalServerSoftwareEntry" nillable="true"
type="PhysicalServerSoftwareEntryType"/>
<xs:complexType name="DeviceLayoutType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Rows" nillable="true" type="RowsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DeviceLayout" nillable="true" type="DeviceLayoutType"/>
<xs:complexType name="RowsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Row" nillable="true"
type="LayoutRowType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Rows" nillable="true" type="RowsType"/>
<xs:complexType name="LayoutRowType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Index" type="xs:int"/>
        <xs:element minOccurs="0" name="Groups" nillable="true" type="GroupsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="LayoutRow" nillable="true" type="LayoutRowType"/>
<xs:complexType name="GroupsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Group" nillable="true"
type="LayoutGroupType"/>
  </xs:sequence>
```

```
</xs:complexType>
<xs:element name="Groups" nillable="true" type="GroupsType"/>
<xs:complexType name="LayoutGroupType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Index" type="xs:int"/>
        <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="VirtualMachineReferencesType"/>
        <xs:element minOccurs="0" name="PhysicalDevices" nillable="true"
type="PhysicalDeviceReferencesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="LayoutGroup" nillable="true" type="LayoutGroupType"/>
<xs:complexType name="DeviceLicensedSoftwareType">
  <xs:sequence>
    <xs:element minOccurs="0" name="HourlyLicensedSoftware" nillable="true" type="SoftwareType"/>
    <xs:element minOccurs="0" name="MonthlyLicensedSoftware" nillable="true" type="SoftwareType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="DeviceLicensedSoftware" nillable="true" type="DeviceLicensedSoftwareType"/>
<xs:complexType name="SoftwareType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Software" nillable="true"
type="SoftwareEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="Software" nillable="true" type="SoftwareType"/>
<xs:complexType name="SoftwareEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ProcessorCountPerUnit" type="xs:int"/>
    <xs:element minOccurs="0" name="CostPerUnit" type="xs:decimal"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="SoftwareEntry" nillable="true" type="SoftwareEntryType"/>
```

```
<xs:simpleType name="LayoutDirection">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Up"/>
    <xs:enumeration value="Down"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="LayoutDirection" nillable="true" type="LayoutDirection"/>
<xs:complexType name="LayoutRequestType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Row" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="Group" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="NewRow" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="NewGroup" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="LayoutRequest" nillable="true" type="LayoutRequestType"/>
<xs:complexType name="OperatingSystemType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="FamilyName" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ConfigurationOptions" nillable="true"
type="VirtualMachineConfigurationOptionsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="OperatingSystem" nillable="true" type="OperatingSystemType"/>
<xs:complexType name="VirtualMachineConfigurationOptionsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Processor" nillable="true"
type="ConfigurationOptionRangeType"/>
        <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityRangeType"/>
        <xs:element minOccurs="0" name="Disk" nillable="true" type="DiskConfigurationOptionType"/>
        <xs:element minOccurs="0" name="NetworkAdapter" nillable="true"
type="ConfigurationOptionRangeType"/>
```

```
      <xs:element minOccurs="0" name="Customization" nillable="true"
type="CustomizationOptionType"/>

      <xs:element minOccurs="0" name="ComputeMatrix" nillable="true" type="ComputeMatrixType"/>

     </xs:sequence>

   </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="VirtualMachineConfigurationOptions" nillable="true"
type="VirtualMachineConfigurationOptionsType"/>

<xs:complexType name="ConfigurationOptionRangeType">

  <xs:sequence>

    <xs:element name="Minimum" type="xs:int"/>

    <xs:element name="Maximum" type="xs:int"/>

    <xs:element name="StepFactor" type="xs:int"/>

  </xs:sequence>

</xs:complexType>

<xs:element name="ConfigurationOptionRange" nillable="true" type="ConfigurationOptionRangeType"/>

<xs:complexType name="DiskConfigurationOptionType">

  <xs:sequence>

    <xs:element name="Minimum" type="xs:int"/>

    <xs:element name="Maximum" type="xs:int"/>

    <xs:element minOccurs="0" name="SystemDisk" nillable="true"
type="DiskConfigurationOptionRangeType"/>

    <xs:element minOccurs="0" name="DataDisk" nillable="true"
type="DiskConfigurationOptionRangeType"/>

  </xs:sequence>

</xs:complexType>

<xs:element name="DiskConfigurationOption" nillable="true" type="DiskConfigurationOptionType"/>

<xs:complexType name="DiskConfigurationOptionRangeType">

  <xs:sequence>

    <xs:element minOccurs="0" name="ResourceCapacityRange" nillable="true"
type="ResourceCapacityRangeType"/>

    <xs:element minOccurs="0" name="MonthlyCost" nillable="true" type="xs:decimal"/>

  </xs:sequence>

</xs:complexType>

<xs:element name="DiskConfigurationOptionRange" nillable="true"
type="DiskConfigurationOptionRangeType"/>

<xs:complexType name="CustomizationOptionType">

  <xs:sequence>
```

```
    <xs:element name="Type" type="CustomizationTypeEnum"/>
    <xs:element name="CanPowerOn" type="xs:boolean"/>
    <xs:element name="PasswordRequired" type="xs:boolean"/>
    <xs:element name="SshKeyRequired" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CustomizationOption" nillable="true" type="CustomizationOptionType"/>
<xs:simpleType name="CustomizationTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Windows"/>
    <xs:enumeration value="Linux"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CustomizationType" nillable="true" type="CustomizationTypeEnum"/>
<xs:complexType name="ComputeMatrixType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Entry" nillable="true"
type="ComputeMatrixEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputeMatrix" nillable="true" type="ComputeMatrixType"/>
<xs:complexType name="ComputeMatrixEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="ProcessorCount" type="xs:int"/>
    <xs:element minOccurs="0" name="Memory" type="xs:int"/>
    <xs:element minOccurs="0" name="HourlyCost" type="xs:decimal"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputeMatrixEntry" nillable="true" type="ComputeMatrixEntryType"/>
<xs:complexType name="OperatingSystemsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfOperatingSystemResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="OperatingSystems" nillable="true" type="OperatingSystemsType"/>
<xs:complexType name="ArrayOfOperatingSystemResourceType">
  <xs:annotation>
    <xs:appinfo>
```

```
    <GenericType Name="{0}Resource" Namespace="" xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
      <GenericParameter Name="ArrayOfOperatingSystem" Namespace=""/>
      <GenericParameter Name="OperatingSystem" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystem" nillable="true" type="OperatingSystemType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfOperatingSystemType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystem" nillable="true" type="OperatingSystemType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="OperatingSystemFamiliesType">
  <xs:complexContent mixed="false">
   <xs:extension base="ArrayOfOperatingSystemFamilyResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="OperatingSystemFamilies" nillable="true" type="OperatingSystemFamiliesType"/>
<xs:complexType name="ArrayOfOperatingSystemFamilyResourceType">
  <xs:annotation>
   <xs:appinfo>
    <GenericType Name="{0}Resource" Namespace="" xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
      <GenericParameter Name="ArrayOfOperatingSystemFamily" Namespace=""/>
      <GenericParameter Name="OperatingSystemFamily" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystemFamily" nillable="true"
type="OperatingSystemFamilyType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfOperatingSystemFamilyType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystemFamily" nillable="true"
type="OperatingSystemFamilyType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="OperatingSystemFamilyType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="OperatingSystems" nillable="true"
type="OperatingSystemReferencesType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="OperatingSystemFamily" nillable="true" type="OperatingSystemFamilyType"/>
<xs:complexType name="OperatingSystemReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystem" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="OperatingSystemReferences" nillable="true" type="OperatingSystemReferencesType"/>
<xs:complexType name="PhysicalDevicesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfPhysicalDeviceResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PhysicalDevices" nillable="true" type="PhysicalDevicesType"/>
<xs:complexType name="ArrayOfPhysicalDeviceResourceType">
  <xs:annotation>
    <xs:appinfo>
```

```
    <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
      <GenericParameter Name="ArrayOfPhysicalDevice" Namespace=""/>
      <GenericParameter Name="PhysicalDevice" Namespace=""/>
    </GenericType>
   </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="PhysicalDevice" nillable="true"
type="PhysicalDeviceType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfPhysicalDeviceType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="PhysicalDevice" nillable="true"
type="PhysicalDeviceType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AttachDisksType">
  <xs:sequence>
   <xs:element name="DetachedDisks" nillable="true" type="DetachedVirtualDiskReferencesType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="AttachDisks" nillable="true" type="AttachDisksType"/>
<xs:complexType name="DetachedVirtualDiskReferencesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="DetachedDisk" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="DetachedVirtualDiskReferences" nillable="true"
type="DetachedVirtualDiskReferencesType"/>
<xs:complexType name="CopyIdenticalVirtualMachineType">
  <xs:sequence>
   <xs:element name="Source" nillable="true" type="ReferenceType"/>
```

```
    <xs:element minOccurs="0" name="Layout" nillable="true" type="LayoutRequestType"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CopyIdenticalVirtualMachine" nillable="true"
type="CopyIdenticalVirtualMachineType"/>
<xs:complexType name="CopyVirtualMachineType">
  <xs:sequence>
    <xs:element name="Source" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="ProcessorCount" type="xs:int"/>
    <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Layout" nillable="true" type="LayoutRequestType"/>
    <xs:element minOccurs="0" name="DisableCustomization" nillable="true" type="xs:boolean"/>
    <xs:element minOccurs="0" name="LinuxCustomization" nillable="true"
type="LinuxCustomizationType"/>
    <xs:element minOccurs="0" name="WindowsCustomization" nillable="true"
type="WindowsCustomizationType"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Tags" nillable="true" type="TagsType"/>
    <xs:element minOccurs="0" name="PoweredOn" nillable="true" type="xs:boolean"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CopyVirtualMachine" nillable="true" type="CopyVirtualMachineType"/>
<xs:complexType name="LinuxCustomizationType">
  <xs:sequence>
    <xs:element name="NetworkSettings" nillable="true" type="NetworkSettingsType"/>
    <xs:element minOccurs="0" name="SshKey" nillable="true" type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="LinuxCustomization" nillable="true" type="LinuxCustomizationType"/>
<xs:complexType name="NetworkSettingsType">
  <xs:sequence>
    <xs:element name="NetworkAdapterSettings" nillable="true" type="NetworkAdapterSettingsType"/>
    <xs:element minOccurs="0" name="DnsSettings" nillable="true" type="DnsSettingsType"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="NetworkSettings" nillable="true" type="NetworkSettingsType"/>
<xs:complexType name="NetworkAdapterSettingsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="NetworkAdapter" nillable="true"
type="NetworkAdapterSettingType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkAdapterSettings" nillable="true" type="NetworkAdapterSettingsType"/>
<xs:complexType name="NetworkAdapterSettingType">
  <xs:sequence>
    <xs:element name="Network" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="IpAddress" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkAdapterSetting" nillable="true" type="NetworkAdapterSettingType"/>
<xs:complexType name="DnsSettingsType">
  <xs:sequence>
    <xs:element minOccurs="0" name="PrimaryDns" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="SecondaryDns" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="DnsSettings" nillable="true" type="DnsSettingsType"/>
<xs:complexType name="WindowsCustomizationType">
  <xs:sequence>
    <xs:element name="NetworkSettings" nillable="true" type="NetworkSettingsType"/>
    <xs:element minOccurs="0" name="Password" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LicenseKey" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="WindowsCustomization" nillable="true" type="WindowsCustomizationType"/>
<xs:complexType name="CreateVirtualMachineRequestType">
  <xs:sequence>
    <xs:element name="ProcessorCount" type="xs:int"/>
    <xs:element name="Memory" nillable="true" type="ResourceCapacityType"/>
    <xs:element name="Layout" nillable="true" type="LayoutRequestType"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Tags" nillable="true" type="TagsType"/>
  </xs:sequence>
```

```
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateVirtualMachineRequest" nillable="true"
type="CreateVirtualMachineRequestType"/>
<xs:complexType name="ImportVirtualMachineType">
  <xs:complexContent mixed="false">
    <xs:extension base="CreateVirtualMachineRequestType">
      <xs:sequence>
        <xs:element name="CatalogEntry" nillable="true" type="ReferenceType"/>
        <xs:element name="NetworkMappings" nillable="true" type="ImportNetworkMappingsType"/>
        <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ImportVirtualMachine" nillable="true" type="ImportVirtualMachineType"/>
<xs:complexType name="ImportNetworkMappingsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="NetworkMapping" nillable="true"
type="ImportNetworkMappingType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ImportNetworkMappings" nillable="true" type="ImportNetworkMappingsType"/>
<xs:complexType name="ImportNetworkMappingType">
  <xs:sequence>
    <xs:element name="Network" nillable="true" type="ReferenceType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="ImportNetworkMapping" nillable="true" type="ImportNetworkMappingType"/>
<xs:complexType name="CreateBlankVirtualMachineType">
  <xs:complexContent mixed="false">
    <xs:extension base="CreateVirtualMachineRequestType">
      <xs:sequence>
        <xs:element name="OperatingSystem" nillable="true" type="ReferenceType"/>
        <xs:element name="Disks" nillable="true" type="DisksType"/>
        <xs:element name="NetworkAdapterSettings" nillable="true" type="NetworkAdapterSettingsType"/>
        <xs:element name="DetachedDisks" nillable="true" type="DetachedVirtualDiskReferencesType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CreateBlankVirtualMachine" nillable="true" type="CreateBlankVirtualMachineType"/>
<xs:complexType name="CreateGuestProcessType">
  <xs:sequence>
   <xs:element minOccurs="0" name="ProgramPath" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Arguments" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Interpreter" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Script" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateGuestProcess" nillable="true" type="CreateGuestProcessType"/>
<xs:complexType name="CreateOsTemplateVirtualMachineRequestType">
  <xs:complexContent mixed="false">
   <xs:extension base="CreateVirtualMachineRequestType">
    <xs:sequence>
     <xs:element minOccurs="0" name="LinuxCustomization" nillable="true"
type="LinuxCustomizationType"/>
     <xs:element minOccurs="0" name="WindowsCustomization" nillable="true"
type="WindowsCustomizationType"/>
     <xs:element minOccurs="0" name="PoweredOn" nillable="true" type="xs:boolean"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CreateOsTemplateVirtualMachineRequest" nillable="true"
type="CreateOsTemplateVirtualMachineRequestType"/>
<xs:complexType name="CreateVirtualMachineType">
  <xs:complexContent mixed="false">
   <xs:extension base="CreateOsTemplateVirtualMachineRequestType">
    <xs:sequence>
     <xs:element name="Template" nillable="true" type="ReferenceType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="CreateVirtualMachine" nillable="true" type="CreateVirtualMachineType"/>
<xs:complexType name="DetachDiskType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element name="Disk" nillable="true" type="VirtualDiskBaseType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="DetachDisk" nillable="true" type="DetachDiskType"/>
<xs:complexType name="ExportVirtualMachineRequestType">
  <xs:sequence>
    <xs:element name="CatalogName" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ExportVirtualMachineRequest" nillable="true"
type="ExportVirtualMachineRequestType"/>
<xs:complexType name="GuestProcessType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ProcessId" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="GuestProcess" nillable="true" type="GuestProcessType"/>
<xs:complexType name="GuestProcessesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfGuestProcessResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="GuestProcesses" nillable="true" type="GuestProcessesType"/>
<xs:complexType name="ArrayOfGuestProcessResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfGuestProcess" Namespace=""/>
        <GenericParameter Name="GuestProcess" Namespace=""/>
      </GenericType>
    </xs:appinfo>
```

```
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="GuestProcess" nillable="true"
type="GuestProcessType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfGuestProcessType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="GuestProcess" nillable="true"
type="GuestProcessType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="MksTicketType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Host" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Port" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="ConfigurationPath" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Ticket" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="MksTicket" nillable="true" type="MksTicketType"/>
<xs:complexType name="TemplateType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ComputeMatrix" nillable="true" type="ComputeMatrixType"/>
        <xs:element minOccurs="0" name="Processor" nillable="true"
type="ConfigurationOptionRangeType"/>
        <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityRangeType"/>
        <xs:element minOccurs="0" name="Storage" nillable="true" type="TemplateStorageType"/>
        <xs:element minOccurs="0" name="NetworkAdapters" type="xs:int"/>
        <xs:element minOccurs="0" name="Customization" nillable="true"
type="CustomizationOptionType"/>
```

```
      <xs:element minOccurs="0" name="LicensedSoftware" nillable="true"
type="DeviceLicensedSoftwareType"/>
     </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Template" nillable="true" type="TemplateType"/>
<xs:complexType name="TemplateStorageType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Size" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="HourlyCost" nillable="true" type="xs:decimal"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateStorage" nillable="true" type="TemplateStorageType"/>
<xs:complexType name="TemplateCategoriesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Category" nillable="true"
type="TemplateCategoryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateCategories" nillable="true" type="TemplateCategoriesType"/>
<xs:complexType name="TemplateCategoryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="OperatingSystems" nillable="true"
type="TemplateOperatingSystemsType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateCategory" nillable="true" type="TemplateCategoryType"/>
<xs:complexType name="TemplateOperatingSystemsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="OperatingSystem" nillable="true"
type="TemplateOperatingSystemType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateOperatingSystems" nillable="true" type="TemplateOperatingSystemsType"/>
<xs:complexType name="TemplateOperatingSystemType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
```

```
    <xs:element minOccurs="0" name="Templates" nillable="true" type="TemplateReferencesType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateOperatingSystem" nillable="true" type="TemplateOperatingSystemType"/>
<xs:complexType name="TemplateReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Template" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateReferences" nillable="true" type="TemplateReferencesType"/>
<xs:complexType name="TemplateFamiliesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Family" nillable="true"
type="TemplateFamilyType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateFamilies" nillable="true" type="TemplateFamiliesType"/>
<xs:complexType name="TemplateFamilyType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Categories" nillable="true" type="TemplateCategoriesType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TemplateFamily" nillable="true" type="TemplateFamilyType"/>
<xs:complexType name="TemplatesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Families" nillable="true" type="TemplateFamiliesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Templates" nillable="true" type="TemplatesType"/>
<xs:complexType name="VirtualMachinesType">
  <xs:complexContent mixed="false">
    <xs:extension base="VirtualMachineReferencesResourceType"/>
```

```
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachines" nillable="true" type="VirtualMachinesType"/>
<xs:complexType name="VirtualMachineReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="VirtualMachineReferences" Namespace=""/>
        <GenericParameter Name="VirtualMachineReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true" 
type="VirtualMachineReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachineReferencesResource" nillable="true" 
type="VirtualMachineReferencesResourceType"/>
<xs:complexType name="CreateRnatAssociationType">
  <xs:sequence>
    <xs:element name="PublicIp" nillable="true" type="ReferenceType"/>
    <xs:element name="IpAddress" nillable="true" type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateRnatAssociation" nillable="true" type="CreateRnatAssociationType"/>
<xs:complexType name="EnvironmentNetworkSummaryType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Networks" nillable="true" type="NetworkHostSummaryType"/>
        <xs:element minOccurs="0" name="PublicIpAddresses" nillable="true" 
type="PublicIpAddressesType"/>
```

```
      <xs:element minOccurs="0" name="InternetServices" nillable="true"
type="InternetServiceReferencesType"/>

      <xs:element minOccurs="0" name="NodeServices" nillable="true"
type="NodeServiceReferencesType"/>

      <xs:element minOccurs="0" name="FirewallAcls" nillable="true"
type="FirewallAclReferencesType"/>

      <xs:element minOccurs="0" name="TrustedNetworkGroups" nillable="true"
type="TrustedNetworkGroupReferencesType"/>

    </xs:sequence>

   </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="EnvironmentNetworkSummary" nillable="true" type="EnvironmentNetworkSummaryType"/>

<xs:complexType name="NetworkHostSummaryType">

  <xs:complexContent mixed="false">

   <xs:extension base="NetworkHostSummaryNetworksResourceType"/>

  </xs:complexContent>

</xs:complexType>

<xs:element name="NetworkHostSummary" nillable="true" type="NetworkHostSummaryType"/>

<xs:complexType name="NetworkHostSummaryNetworksResourceType">

  <xs:annotation>

   <xs:appinfo>

    <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">

      <GenericParameter Name="NetworkHostSummaryNetworks" Namespace=""/>

      <GenericParameter Name="NetworkHostSummaryNetwork" Namespace=""/>

    </GenericType>

   </xs:appinfo>

  </xs:annotation>

  <xs:complexContent mixed="false">

   <xs:extension base="ResourceType">

    <xs:sequence>

      <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="NetworkHostSummaryNetworkType"/>

    </xs:sequence>

   </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="NetworkHostSummaryNetworksResource" nillable="true"
type="NetworkHostSummaryNetworksResourceType"/>
```

```
<xs:complexType name="NetworkHostSummaryNetworksType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="NetworkHostSummaryNetworkType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkHostSummaryNetworks" nillable="true"
type="NetworkHostSummaryNetworksType"/>
<xs:complexType name="NetworkHostSummaryNetworkType">
  <xs:complexContent mixed="false">
    <xs:extension base="NetworkReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Hosts" nillable="true" type="NetworkHostSummaryHostsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkHostSummaryNetwork" nillable="true" type="NetworkHostSummaryNetworkType"/>
<xs:complexType name="NetworkHostSummaryHostsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Host" nillable="true"
type="NetworkHostSummaryHostType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkHostSummaryHosts" nillable="true" type="NetworkHostSummaryHostsType"/>
<xs:complexType name="NetworkHostSummaryHostType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="IpAddresses" nillable="true" type="IpAddressReferencesType"/>
        <xs:element minOccurs="0" name="PoweredOn" nillable="true" type="xs:boolean"/>
        <xs:element minOccurs="0" name="Status" nillable="true" type="VirtualMachineStatus"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkHostSummaryHost" nillable="true" type="NetworkHostSummaryHostType"/>
<xs:complexType name="IpAddressReferencesType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="IpAddressReferences" nillable="true" type="IpAddressReferencesType"/>
<xs:complexType name="PublicIpAddressesType">
  <xs:complexContent mixed="false">
    <xs:extension base="PublicIpAddressReferencesResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Remaining" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PublicIpAddresses" nillable="true" type="PublicIpAddressesType"/>
<xs:complexType name="PublicIpAddressReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="PublicIpAddressReferences" Namespace=""/>
        <GenericParameter Name="PublicIpAddressReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="PublicIp" nillable="true"
type="PublicIpAddressReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PublicIpAddressReferencesResource" nillable="true"
type="PublicIpAddressReferencesResourceType"/>
<xs:complexType name="PublicIpAddressReferencesType">
  <xs:sequence>
```

```
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PublicIp" nillable="true"
type="PublicIpAddressReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PublicIpAddressReferences" nillable="true" type="PublicIpAddressReferencesType"/>
<xs:complexType name="PublicIpAddressReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="IpType" type="PublicIpTypeEnum"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PublicIpAddressReference" nillable="true" type="PublicIpAddressReferenceType"/>
<xs:simpleType name="PublicIpTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="none"/>
    <xs:enumeration value="rnat"/>
    <xs:enumeration value="defaultRnat"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="PublicIpType" nillable="true" type="PublicIpTypeEnum"/>
<xs:complexType name="InternetServiceReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="InternetService" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="InternetServiceReferences" nillable="true" type="InternetServiceReferencesType"/>
<xs:complexType name="NodeServiceReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="NodeService" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NodeServiceReferences" nillable="true" type="NodeServiceReferencesType"/>
<xs:complexType name="FirewallAclReferencesType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="FirewallAcl" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="FirewallAclReferences" nillable="true" type="FirewallAclReferencesType"/>
<xs:complexType name="TrustedNetworkGroupReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TrustedNetworkGroup" nillable="true"
type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TrustedNetworkGroupReferences" nillable="true"
type="TrustedNetworkGroupReferencesType"/>
<xs:complexType name="ExternalHostType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Address" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ExternalHost" nillable="true" type="ExternalHostType"/>
<xs:complexType name="ExternalNetworkType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Address" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Size" type="xs:unsignedInt"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ExternalNetwork" nillable="true" type="ExternalNetworkType"/>
<xs:complexType name="IpAddressType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Host" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="DetectedOn" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="RnatAddress" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="Reserved" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```

```
</xs:complexType>
<xs:element name="IpAddress" nillable="true" type="IpAddressType"/>
<xs:complexType name="IpAddressesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="IpAddressType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="IpAddresses" nillable="true" type="IpAddressesType"/>
<xs:complexType name="IpAddressReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Network" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="Host" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="IpAddressReference" nillable="true" type="IpAddressReferenceType"/>
<xs:complexType name="NetworkType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Address" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="NetworkType" type="NetworkTypeEnum"/>
        <xs:element minOccurs="0" name="BroadcastAddress" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="GatewayAddress" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="RnatAddress" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="IpAddresses" nillable="true" type="IpAddressesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Network" nillable="true" type="NetworkType"/>
<xs:complexType name="NetworkHostType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="Device" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="Networks" nillable="true" type="NetworkHostNetworksType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkHost" nillable="true" type="NetworkHostType"/>
<xs:complexType name="NetworkHostNetworksType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="NetworkHostNetworkType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkHostNetworks" nillable="true" type="NetworkHostNetworksType"/>
<xs:complexType name="NetworkHostNetworkType">
  <xs:complexContent mixed="false">
   <xs:extension base="NetworkReferenceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="IpAddresses" nillable="true"
type="NetworkHostIpAddressesType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkHostNetwork" nillable="true" type="NetworkHostNetworkType"/>
<xs:complexType name="NetworkHostIpAddressesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="NetworkHostIpAddressType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="NetworkHostIpAddresses" nillable="true" type="NetworkHostIpAddressesType"/>
<xs:complexType name="NetworkHostIpAddressType">
  <xs:complexContent mixed="false">
   <xs:extension base="ReferenceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="NodeServices" nillable="true" type="ArrayOfNodeServiceType"/>
```

```
      <xs:element minOccurs="0" name="FirewallAcls" nillable="true" type="ArrayOfFirewallAclType"/>
      <xs:element minOccurs="0" name="FirewallLog" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="Rnat" nillable="true" type="ReferenceType"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkHostIpAddress" nillable="true" type="NetworkHostIpAddressType"/>
<xs:complexType name="ArrayOfNodeServiceType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="NodeService" nillable="true"
type="NodeServiceType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="NodeServiceType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
     <xs:sequence>
      <xs:element minOccurs="0" name="IpAddress" nillable="true" type="IpAddressReferenceType"/>
      <xs:element minOccurs="0" name="Protocol" type="ProtocolTypeEnum"/>
      <xs:element minOccurs="0" name="Port" type="xs:unsignedInt"/>
      <xs:element name="Enabled" type="xs:boolean"/>
      <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
     </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NodeService" nillable="true" type="NodeServiceType"/>
<xs:simpleType name="ProtocolTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="HTTP"/>
    <xs:enumeration value="HTTPS"/>
    <xs:enumeration value="TCP"/>
    <xs:enumeration value="UDP"/>
    <xs:enumeration value="IPSEC"/>
    <xs:enumeration value="FTP"/>
    <xs:enumeration value="Any"/>
  </xs:restriction>
```

```
</xs:simpleType>
<xs:element name="ProtocolType" nillable="true" type="ProtocolTypeEnum"/>
<xs:complexType name="ArrayOfFirewallAclType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="FirewallAcl" nillable="true"
type="FirewallAclType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="FirewallAclType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Permission" type="AclPermissionTypeEnum"/>
        <xs:element minOccurs="0" name="AclType" type="AclTypeEnum"/>
        <xs:element minOccurs="0" name="PortType" type="AclPortTypeEnum"/>
        <xs:element minOccurs="0" name="Protocol" type="ProtocolTypeEnum"/>
        <xs:element minOccurs="0" name="Source" nillable="true" type="FirewallAclEndpointType"/>
        <xs:element minOccurs="0" name="Destination" nillable="true" type="FirewallAclEndpointType"/>
        <xs:element minOccurs="0" name="PortRange" nillable="true" type="PortRangeType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="FirewallAcl" nillable="true" type="FirewallAclType"/>
<xs:simpleType name="AclPermissionTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="allow"/>
    <xs:enumeration value="deny"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AclPermissionType" nillable="true" type="AclPermissionTypeEnum"/>
<xs:simpleType name="AclTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="internetService"/>
    <xs:enumeration value="custom"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AclType" nillable="true" type="AclTypeEnum"/>
```

```
<xs:simpleType name="AclPortTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Any"/>
    <xs:enumeration value="Specific"/>
    <xs:enumeration value="Range"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="AclPortType" nillable="true" type="AclPortTypeEnum"/>
<xs:complexType name="FirewallAclEndpointType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Type" type="FirewallAclEndpointTypeEnum"/>
    <xs:element minOccurs="0" name="ExternalIpAddress" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="ExternalNetwork" nillable="true" type="ExternalNetworkType"/>
    <xs:element minOccurs="0" name="IpAddress" nillable="true" type="IpAddressReferenceType"/>
    <xs:element minOccurs="0" name="Network" nillable="true" type="NetworkReferenceType"/>
    <xs:element minOccurs="0" name="TrustedNetworkGroup" nillable="true" type="ReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="FirewallAclEndpoint" nillable="true" type="FirewallAclEndpointType"/>
<xs:simpleType name="FirewallAclEndpointTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Any"/>
    <xs:enumeration value="IpAddress"/>
    <xs:enumeration value="Network"/>
    <xs:enumeration value="ExternalIp"/>
    <xs:enumeration value="ExternalNetwork"/>
    <xs:enumeration value="TrustedNetworkGroup"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="FirewallAclEndpointType" nillable="true" type="FirewallAclEndpointTypeEnum"/>
<xs:complexType name="PortRangeType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Start" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="End" type="xs:unsignedInt"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PortRange" nillable="true" type="PortRangeType"/>
```

```
<xs:complexType name="NetworksType">
  <xs:complexContent mixed="false">
    <xs:extension base="NetworkReferencesResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Networks" nillable="true" type="NetworksType"/>
<xs:complexType name="NetworkReferencesResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="NetworkReferences" Namespace=""/>
        <GenericParameter Name="NetworkReference" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true" 
type="NetworkReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkReferencesResource" nillable="true" type="NetworkReferencesResourceType"/>
<xs:complexType name="NetworkRnatType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Network" nillable="true" type="NetworkReferenceType"/>
        <xs:element minOccurs="0" name="Rnat" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="NetworkRnat" nillable="true" type="NetworkRnatType"/>
<xs:complexType name="PublicIpType">
```

```
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="PublicIpType" type="PublicIpTypeEnum"/>
        <xs:element minOccurs="0" name="InternetServices" nillable="true"
type="ArrayOfInternetServiceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PublicIp" nillable="true" type="PublicIpType"/>
<xs:complexType name="ArrayOfInternetServiceType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="InternetService" nillable="true"
type="InternetServiceType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="InternetServiceType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Protocol" type="ProtocolTypeEnum"/>
        <xs:element minOccurs="0" name="Port" type="xs:unsignedInt"/>
        <xs:element name="Enabled" type="xs:boolean"/>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="PublicIp" nillable="true" type="ReferenceType"/>
        <xs:element name="Persistence" nillable="true" type="InternetServicePersistenceType"/>
        <xs:element minOccurs="0" name="RedirectUrl" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="Monitor" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="TrustedNetworkGroup" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="BackupInternetService" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="NodeServices" nillable="true" type="ArrayOfNodeServiceType"/>
        <xs:element minOccurs="0" name="LoadBalancingMethod" nillable="true"
type="LoadBalancingMethod"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="InternetService" nillable="true" type="InternetServiceType"/>
<xs:complexType name="InternetServicePersistenceType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Type" type="PersistenceTypeEnum"/>
    <xs:element minOccurs="0" name="Timeout" nillable="true" type="xs:unsignedInt"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="InternetServicePersistence" nillable="true"
type="InternetServicePersistenceType"/>
<xs:simpleType name="PersistenceTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="None"/>
    <xs:enumeration value="SourceIp"/>
    <xs:enumeration value="SslSession"/>
    <xs:enumeration value="CookieInsert"/>
    <xs:enumeration value="SessionCookie"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="PersistenceType" nillable="true" type="PersistenceTypeEnum"/>
<xs:simpleType name="LoadBalancingMethod">
  <xs:restriction base="xs:string">
    <xs:enumeration value="RoundRobin"/>
    <xs:enumeration value="LeastConnection"/>
    <xs:enumeration value="LeastResponseTime"/>
    <xs:enumeration value="LeastPackets">
      <xs:annotation>
        <xs:appinfo>
          <EnumerationValue
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">9</EnumerationValue>
        </xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
<xs:element name="LoadBalancingMethod" nillable="true" type="LoadBalancingMethod"/>
<xs:complexType name="RnatType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" name="Default" type="xs:boolean"/>
      <xs:element minOccurs="0" name="PublicIp" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="Networks" nillable="true" type="NetworkReferencesType"/>
      <xs:element minOccurs="0" name="Associations" nillable="true"
type="RnatHostAssociationsType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Rnat" nillable="true" type="RnatType"/>
<xs:complexType name="RnatHostAssociationsType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="Association" nillable="true"
type="RnatHostAssociationType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="RnatHostAssociations" nillable="true" type="RnatHostAssociationsType"/>
<xs:complexType name="RnatHostAssociationType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="IpAddress" nillable="true" type="IpAddressReferenceType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="RnatHostAssociation" nillable="true" type="RnatHostAssociationType"/>
<xs:complexType name="RnatConfigurationType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="Networks" nillable="true" type="ArrayOfNetworkRnatType"/>
      <xs:element minOccurs="0" name="Rnats" nillable="true" type="ArrayOfRnatType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="RnatConfiguration" nillable="true" type="RnatConfigurationType"/>
<xs:complexType name="ArrayOfNetworkRnatType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="NetworkRnat" nillable="true"
type="NetworkRnatType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ArrayOfRnatType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Rnat" nillable="true" type="RnatType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="BackupInternetServiceType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Protocol" type="ProtocolTypeEnum"/>
        <xs:element minOccurs="0" name="Enabled" type="xs:boolean"/>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element name="Persistence" nillable="true" type="InternetServicePersistenceType"/>
        <xs:element minOccurs="0" name="RedirectUrl" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="InternetServices" nillable="true"
type="InternetServiceReferencesType"/>
        <xs:element minOccurs="0" name="NodeServices" nillable="true" type="ArrayOfNodeServiceType"/>
        <xs:element minOccurs="0" name="LoadBalancingMethod" nillable="true"
type="LoadBalancingMethod"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BackupInternetService" nillable="true" type="BackupInternetServiceType"/>
<xs:complexType name="BackupInternetServiceReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Protocol" type="ProtocolTypeEnum"/>
        <xs:element minOccurs="0" name="Enabled" type="xs:boolean"/>
      </xs:sequence>
```

```
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BackupInternetServiceReference" nillable="true"
type="BackupInternetServiceReferenceType"/>
<xs:complexType name="BackupInternetServiceReferencesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="BackupInternetService" nillable="true"
type="BackupInternetServiceReferenceType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="BackupInternetServiceReferences" nillable="true"
type="BackupInternetServiceReferencesType"/>
<xs:complexType name="BackupInternetServicesType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfBackupInternetServiceResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="BackupInternetServices" nillable="true" type="BackupInternetServicesType"/>
<xs:complexType name="ArrayOfBackupInternetServiceResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfBackupInternetService" Namespace=""/>
        <GenericParameter Name="BackupInternetService" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="BackupInternetService" nillable="true"
type="BackupInternetServiceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfBackupInternetServiceType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="BackupInternetService" nillable="true"
type="BackupInternetServiceType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="InternetServiceMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="InternetServiceMonitor" nillable="true" type="InternetServiceMonitorType"/>
<xs:complexType name="HttpMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="ConfigurableInternetServiceMonitorType">
      <xs:sequence>
        <xs:element minOccurs="0" name="RequestUri" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="HttpHeaders" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ResponseCodes" nillable="true"
type="HttpMonitorResponseCodesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="HttpMonitor" nillable="true" type="HttpMonitorType"/>
<xs:complexType name="ConfigurableInternetServiceMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="InternetServiceMonitorType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Interval" type="xs:unsignedInt"/>
        <xs:element minOccurs="0" name="ResponseTimeout" type="xs:unsignedInt"/>
        <xs:element minOccurs="0" name="Retries" type="xs:unsignedInt"/>
        <xs:element minOccurs="0" name="Downtime" type="xs:unsignedInt"/>
        <xs:element minOccurs="0" name="Enabled" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="ConfigurableInternetServiceMonitor" nillable="true"
type="ConfigurableInternetServiceMonitorType"/>
<xs:complexType name="PingMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="ConfigurableInternetServiceMonitorType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PingMonitor" nillable="true" type="PingMonitorType"/>
<xs:complexType name="EcvMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="ConfigurableInternetServiceMonitorType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SendString" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="HttpHeaders" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ReceiveString" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="EcvMonitor" nillable="true" type="EcvMonitorType"/>
<xs:complexType name="LoopbackMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="InternetServiceMonitorType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="LoopbackMonitor" nillable="true" type="LoopbackMonitorType"/>
<xs:complexType name="DefaultMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="InternetServiceMonitorType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DefaultMonitor" nillable="true" type="DefaultMonitorType"/>
<xs:complexType name="HttpMonitorResponseCodesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="ResponseCode" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="HttpMonitorResponseCodes" nillable="true" type="HttpMonitorResponseCodesType"/>
<xs:complexType name="CreateBackupInternetServiceType">
  <xs:sequence>
    <xs:element name="Protocol" type="ProtocolTypeEnum"/>
    <xs:element name="Enabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Persistence" nillable="true"
type="InternetServicePersistenceType"/>
    <xs:element minOccurs="0" name="RedirectUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="LoadBalancingMethod" nillable="true"
type="LoadBalancingMethod"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateBackupInternetService" nillable="true"
type="CreateBackupInternetServiceType"/>
<xs:complexType name="CreateInternetServiceMonitorRequestType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Interval" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="ResponseTimeout" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="Retries" type="xs:unsignedInt"/>
    <xs:element minOccurs="0" name="Downtime" type="xs:unsignedInt"/>
    <xs:element name="Enabled" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateInternetServiceMonitorRequest" nillable="true"
type="CreateInternetServiceMonitorRequestType"/>
<xs:complexType name="CreateEcvMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="CreateInternetServiceMonitorRequestType">
      <xs:sequence>
        <xs:element minOccurs="0" name="SendString" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="HttpHeaders" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ReceiveString" nillable="true" type="xs:string"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CreateEcvMonitor" nillable="true" type="CreateEcvMonitorType"/>
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<xs:complexType name="CreateHttpMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="CreateInternetServiceMonitorRequestType">
      <xs:sequence>
        <xs:element minOccurs="0" name="RequestUri" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="HttpHeaders" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="ResponseCodes" nillable="true"
type="HttpMonitorResponseCodesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CreateHttpMonitor" nillable="true" type="CreateHttpMonitorType"/>
<xs:complexType name="CreateInternetServiceType">
  <xs:sequence>
    <xs:element name="Protocol" type="ProtocolTypeEnum"/>
    <xs:element name="Port" type="xs:unsignedInt"/>
    <xs:element name="Enabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Persistence" nillable="true"
type="InternetServicePersistenceType"/>
    <xs:element minOccurs="0" name="RedirectUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="TrustedNetworkGroup" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="BackupInternetService" nillable="true" type="ReferenceType"/>
    <xs:element minOccurs="0" name="LoadBalancingMethod" nillable="true"
type="LoadBalancingMethod"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateInternetService" nillable="true" type="CreateInternetServiceType"/>
<xs:complexType name="CreateNodeServiceType">
  <xs:sequence>
    <xs:element name="IpAddress" nillable="true" type="ReferenceType"/>
    <xs:element name="Port" type="xs:unsignedInt"/>
    <xs:element name="Enabled" type="xs:boolean"/>
    <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
```

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</xs:complexType>
<xs:element name="CreateNodeService" nillable="true" type="CreateNodeServiceType"/>
<xs:complexType name="CreatePingMonitorType">
  <xs:complexContent mixed="false">
    <xs:extension base="CreateInternetServiceMonitorRequestType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CreatePingMonitor" nillable="true" type="CreatePingMonitorType"/>
<xs:complexType name="CreateFirewallAclType">
  <xs:sequence>
    <xs:element name="Permission" type="AclPermissionTypeEnum"/>
    <xs:element name="Protocol" type="ProtocolTypeEnum"/>
    <xs:element name="Source" nillable="true" type="FirewallAclEndpointType"/>
    <xs:element minOccurs="0" name="Destination" nillable="true" type="FirewallAclEndpointType"/>
    <xs:element minOccurs="0" name="PortRange" nillable="true" type="PortRangeType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CreateFirewallAcl" nillable="true" type="CreateFirewallAclType"/>
<xs:complexType name="CreateTrustedNetworkGroupType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Hosts" nillable="true" type="TrustedNetworkGroupHostsType"/>
    <xs:element minOccurs="0" name="Networks" nillable="true"
type="TrustedNetworkGroupNetworksType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string" use="required"/>
</xs:complexType>
<xs:element name="CreateTrustedNetworkGroup" nillable="true" type="CreateTrustedNetworkGroupType"/>
<xs:complexType name="TrustedNetworkGroupHostsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="IpAddress" nillable="true"
type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="TrustedNetworkGroupHosts" nillable="true" type="TrustedNetworkGroupHostsType"/>
<xs:complexType name="TrustedNetworkGroupNetworksType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Network" nillable="true"
type="ExternalNetworkType"/>
```

```
  </xs:sequence>
</xs:complexType>
<xs:element name="TrustedNetworkGroupNetworks" nillable="true"
type="TrustedNetworkGroupNetworksType"/>
<xs:complexType name="FirewallAclsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfFirewallAclResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="FirewallAcls" nillable="true" type="FirewallAclsType"/>
<xs:complexType name="ArrayOfFirewallAclResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfFirewallAcl" Namespace=""/>
        <GenericParameter Name="FirewallAcl" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="FirewallAcl" nillable="true"
type="FirewallAclType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="FirewallLogType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="IpAddress" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="ExternalIpAddress" nillable="true" type="ExternalHostType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
```

```
</xs:complexType>
<xs:element name="FirewallLog" nillable="true" type="FirewallLogType"/>
<xs:complexType name="TrustedNetworkGroupType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Hosts" nillable="true" type="TrustedNetworkGroupHostsType"/>
        <xs:element minOccurs="0" name="Networks" nillable="true"
type="TrustedNetworkGroupNetworksType"/>
        <xs:element minOccurs="0" name="InternetServices" nillable="true"
type="InternetServiceReferencesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="TrustedNetworkGroup" nillable="true" type="TrustedNetworkGroupType"/>
<xs:complexType name="TrustedNetworkGroupsType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfTrustedNetworkGroupResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="TrustedNetworkGroups" nillable="true" type="TrustedNetworkGroupsType"/>
<xs:complexType name="ArrayOfTrustedNetworkGroupResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfTrustedNetworkGroup" Namespace=""/>
        <GenericParameter Name="TrustedNetworkGroup" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="TrustedNetworkGroup" nillable="true"
type="TrustedNetworkGroupType"/>
      </xs:sequence>
    </xs:extension>
```

```
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfTrustedNetworkGroupType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="TrustedNetworkGroup" nillable="true"
type="TrustedNetworkGroupType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AttachDiskRetryOperationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="DetachedDisk" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="VirtualMachine" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="AttachDiskRetryOperation" nillable="true" type="AttachDiskRetryOperationType"/>
<xs:complexType name="ComputePoolType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="VirtualMachineReferencesType"/>
        <xs:element minOccurs="0" name="Purchased" nillable="true" type="ComputePoolCapacityType"/>
        <xs:element minOccurs="0" name="CpuBurst" nillable="true" type="ResourceBurstType"/>
        <xs:element minOccurs="0" name="MemoryBurst" nillable="true" type="ResourceBurstType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePool" nillable="true" type="ComputePoolType"/>
<xs:complexType name="ComputePoolCapacityType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Cpu" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Storage" nillable="true" type="ResourceCapacityType"/>
```

```
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputePoolCapacity" nillable="true" type="ComputePoolCapacityType"/>
<xs:complexType name="ResourceBurstType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Actions" nillable="true" type="ArrayOfActionType"/>
    <xs:element minOccurs="0" name="Status" type="ResourceBurstStatus"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ResourceBurst" nillable="true" type="ResourceBurstType"/>
<xs:simpleType name="ResourceBurstStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Disabled"/>
    <xs:enumeration value="Enabled"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="ResourceBurstStatus" nillable="true" type="ResourceBurstStatus"/>
<xs:complexType name="ComputePoolCpuUsageType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="StartTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="EndTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="CpuUsageDetailSummary" nillable="true"
type="CpuUsageDetailsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolCpuUsage" nillable="true" type="ComputePoolCpuUsageType"/>
<xs:complexType name="CpuUsageDetailsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CpuUsageDetail" nillable="true"
type="ComputePoolCpuUsageDetailSummaryEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CpuUsageDetails" nillable="true" type="CpuUsageDetailsType"/>
<xs:complexType name="ComputePoolCpuUsageDetailSummaryEntryType">
```

```
  <xs:sequence>
    <xs:element minOccurs="0" name="Time" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="Value" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputePoolCpuUsageDetailSummaryEntry" nillable="true"
type="ComputePoolCpuUsageDetailSummaryEntryType"/>
<xs:complexType name="ComputePoolCpuUsageDetailType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Time" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="Value" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="CpuUsage_VirtualMachinesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolCpuUsageDetail" nillable="true" type="ComputePoolCpuUsageDetailType"/>
<xs:complexType name="CpuUsage_VirtualMachinesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true"
type="VirtualMachineCpuUsageDetailType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CpuUsage_VirtualMachines" nillable="true" type="CpuUsage_VirtualMachinesType"/>
<xs:complexType name="VirtualMachineCpuUsageDetailType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Usage" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="Utilization" type="xs:int"/>
        <xs:element minOccurs="0" name="Deleted" nillable="true" type="xs:boolean"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

```
<xs:element name="VirtualMachineCpuUsageDetail" nillable="true"
type="VirtualMachineCpuUsageDetailType"/>

<xs:complexType name="ComputePoolsType">

  <xs:complexContent mixed="false">

    <xs:extension base="ComputePoolReferencesResourceType"/>

  </xs:complexContent>

</xs:complexType>

<xs:element name="ComputePools" nillable="true" type="ComputePoolsType"/>

<xs:complexType name="ComputePoolReferencesResourceType">

  <xs:annotation>

    <xs:appinfo>

      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">

        <GenericParameter Name="ComputePoolReferences" Namespace=""/>

        <GenericParameter Name="ComputePoolReference" Namespace=""/>

      </GenericType>

    </xs:appinfo>

  </xs:annotation>

  <xs:complexContent mixed="false">

    <xs:extension base="ResourceType">

      <xs:sequence>

        <xs:element minOccurs="0" maxOccurs="unbounded" name="ComputePool" nillable="true"
type="ComputePoolReferenceType"/>

      </xs:sequence>

    </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="ComputePoolReferencesResource" nillable="true"
type="ComputePoolReferencesResourceType"/>

<xs:complexType name="ComputePoolMemoryUsageType">

  <xs:complexContent mixed="false">

    <xs:extension base="ResourceType">

      <xs:sequence>

        <xs:element minOccurs="0" name="StartTime" type="xs:dateTime"/>

        <xs:element minOccurs="0" name="EndTime" type="xs:dateTime"/>

        <xs:element minOccurs="0" name="MemoryUsageDetailSummary" nillable="true"
type="MemoryUsageDetailsType"/>

      </xs:sequence>

    </xs:extension>
```

```
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolMemoryUsage" nillable="true" type="ComputePoolMemoryUsageType"/>
<xs:complexType name="MemoryUsageDetailsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="MemoryUsageDetail" nillable="true"
type="ComputePoolMemoryUsageDetailSummaryEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="MemoryUsageDetails" nillable="true" type="MemoryUsageDetailsType"/>
<xs:complexType name="ComputePoolMemoryUsageDetailSummaryEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Time" type="xs:dateTime"/>
    <xs:element minOccurs="0" name="Value" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputePoolMemoryUsageDetailSummaryEntry" nillable="true"
type="ComputePoolMemoryUsageDetailSummaryEntryType"/>
<xs:complexType name="ComputePoolMemoryUsageDetailType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Time" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="Value" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="MemoryUsage_VirtualMachinesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolMemoryUsageDetail" nillable="true"
type="ComputePoolMemoryUsageDetailType"/>
<xs:complexType name="MemoryUsage_VirtualMachinesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true"
type="VirtualMachineMemoryUsageDetailType"/>
  </xs:sequence>
</xs:complexType>
```

```
<xs:element name="MemoryUsage_VirtualMachines" nillable="true"
type="MemoryUsage_VirtualMachinesType"/>

<xs:complexType name="VirtualMachineMemoryUsageDetailType">

  <xs:complexContent mixed="false">

    <xs:extension base="ReferenceType">

      <xs:sequence>

        <xs:element minOccurs="0" name="Usage" nillable="true" type="ResourceCapacityType"/>

        <xs:element minOccurs="0" name="Utilization" type="xs:int"/>

        <xs:element minOccurs="0" name="Deleted" nillable="true" type="xs:boolean"/>

      </xs:sequence>

    </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="VirtualMachineMemoryUsageDetail" nillable="true"
type="VirtualMachineMemoryUsageDetailType"/>

<xs:complexType name="ComputePoolPerformanceStatisticType">

  <xs:sequence>

    <xs:element minOccurs="0" name="Cpu" nillable="true" type="ReferenceType"/>

    <xs:element minOccurs="0" name="Memory" nillable="true" type="ReferenceType"/>

  </xs:sequence>

</xs:complexType>

<xs:element name="ComputePoolPerformanceStatistic" nillable="true"
type="ComputePoolPerformanceStatisticType"/>

<xs:complexType name="ComputePoolPerformanceStatisticsType">

  <xs:complexContent mixed="false">

    <xs:extension base="ResourceType">

      <xs:sequence>

        <xs:element minOccurs="0" name="Hourly" nillable="true"
type="ComputePoolPerformanceStatisticType"/>

        <xs:element minOccurs="0" name="Daily" nillable="true"
type="ComputePoolPerformanceStatisticType"/>

      </xs:sequence>

    </xs:extension>

  </xs:complexContent>

</xs:complexType>

<xs:element name="ComputePoolPerformanceStatistics" nillable="true"
type="ComputePoolPerformanceStatisticsType"/>

<xs:complexType name="ComputePoolResourceSummaryType">

  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="StartTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="EndTime" type="xs:dateTime"/>
        <xs:element minOccurs="0" name="Cpu" nillable="true" type="CpuComputeResourceSummaryType"/>
        <xs:element minOccurs="0" name="Memory" nillable="true"
type="MemoryComputeResourceSummaryType"/>
        <xs:element minOccurs="0" name="Storage" nillable="true" type="StorageResourceSummaryType"/>
        <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="VirtualMachineResourceSummaryType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolResourceSummary" nillable="true"
type="ComputePoolResourceSummaryType"/>
<xs:complexType name="CpuComputeResourceSummaryType">
  <xs:complexContent mixed="false">
    <xs:extension base="ComputeResourceSummaryType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Count" nillable="true" type="xs:int"/>
        <xs:element minOccurs="0" name="PoweredOnCount" nillable="true" type="xs:int"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CpuComputeResourceSummary" nillable="true" type="CpuComputeResourceSummaryType"/>
<xs:complexType name="ComputeResourceSummaryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Allocated" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Consumed" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Purchased" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Utilization" nillable="true" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="ComputeResourceSummary" nillable="true" type="ComputeResourceSummaryType"/>
<xs:complexType name="MemoryComputeResourceSummaryType">
  <xs:complexContent mixed="false">
```

```
    <xs:extension base="ComputeResourceSummaryType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="MemoryComputeResourceSummary" nillable="true"
type="MemoryComputeResourceSummaryType"/>
<xs:complexType name="StorageResourceSummaryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Purchased" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Used" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="StorageResourceSummary" nillable="true" type="StorageResourceSummaryType"/>
<xs:complexType name="VirtualMachineResourceSummaryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Count" nillable="true" type="xs:int"/>
    <xs:element minOccurs="0" name="PoweredOnCount" nillable="true" type="xs:int"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="VirtualMachineResourceSummary" nillable="true"
type="VirtualMachineResourceSummaryType"/>
<xs:complexType name="ComputePoolResourceSummaryListType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfComputePoolResourceSummaryResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolResourceSummaryList" nillable="true"
type="ComputePoolResourceSummaryListType"/>
<xs:complexType name="ArrayOfComputePoolResourceSummaryResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfComputePoolResourceSummary" Namespace=""/>
        <GenericParameter Name="ComputePoolResourceSummary" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
```

```
    <xs:sequence>
      <xs:element minOccurs="0" maxOccurs="unbounded" name="ComputePoolResourceSummary"
nillable="true" type="ComputePoolResourceSummaryType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfComputePoolResourceSummaryType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="ComputePoolResourceSummary"
nillable="true" type="ComputePoolResourceSummaryType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="ComputePoolStorageUsageDetailType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
      <xs:element minOccurs="0" name="Allocated" nillable="true" type="ResourceCapacityType"/>
      <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="StorageDetails_VirtualMachinesType"/>
      <xs:element minOccurs="0" name="DetachedDisks" nillable="true"
type="DetachedDiskReferenceListType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="ComputePoolStorageUsageDetail" nillable="true"
type="ComputePoolStorageUsageDetailType"/>
<xs:complexType name="StorageDetails_VirtualMachinesType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true"
type="VirtualMachineStorageUsageDetailType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="StorageDetails_VirtualMachines" nillable="true"
type="StorageDetails_VirtualMachinesType"/>
<xs:complexType name="VirtualMachineStorageUsageDetailType">
  <xs:complexContent mixed="false">
   <xs:extension base="ReferenceType">
    <xs:sequence>
```

```
      <xs:element minOccurs="0" name="DiskCount" type="xs:int"/>
      <xs:element minOccurs="0" name="Allocated" nillable="true" type="ResourceCapacityType"/>
    </xs:sequence>
  </xs:extension>
 </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachineStorageUsageDetail" nillable="true"
type="VirtualMachineStorageUsageDetailType"/>
<xs:complexType name="DetachedDiskReferenceListType">
 <xs:complexContent mixed="false">
  <xs:extension base="DetachedDiskReferencesResourceType"/>
 </xs:complexContent>
</xs:complexType>
<xs:element name="DetachedDiskReferenceList" nillable="true" type="DetachedDiskReferenceListType"/>
<xs:complexType name="DetachedDiskReferencesResourceType">
 <xs:annotation>
  <xs:appinfo>
   <GenericType Name="{0}Resource" Namespace=""
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
     <GenericParameter Name="DetachedDiskReferences" Namespace=""/>
     <GenericParameter Name="DetachedDiskReference" Namespace=""/>
   </GenericType>
  </xs:appinfo>
 </xs:annotation>
 <xs:complexContent mixed="false">
  <xs:extension base="ResourceType">
   <xs:sequence>
     <xs:element minOccurs="0" maxOccurs="unbounded" name="DetachedDisk" nillable="true"
type="DetachedDiskReferenceType"/>
   </xs:sequence>
  </xs:extension>
 </xs:complexContent>
</xs:complexType>
<xs:element name="DetachedDiskReferencesResource" nillable="true"
type="DetachedDiskReferencesResourceType"/>
<xs:complexType name="DetachedDiskReferencesType">
 <xs:sequence>
  <xs:element minOccurs="0" maxOccurs="unbounded" name="DetachedDisk" nillable="true"
type="DetachedDiskReferenceType"/>
```

```
  </xs:sequence>
</xs:complexType>
<xs:element name="DetachedDiskReferences" nillable="true" type="DetachedDiskReferencesType"/>
<xs:complexType name="DetachedDiskReferenceType">
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Size" nillable="true" type="ResourceCapacityType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DetachedDiskReference" nillable="true" type="DetachedDiskReferenceType"/>
<xs:complexType name="DetachedDiskType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Tasks" nillable="true" type="TasksType"/>
        <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
        <xs:element minOccurs="0" name="LastKnownVirtualMachineConfiguration" nillable="true"
type="SourceVirtualMachineType"/>
        <xs:element minOccurs="0" name="Type" type="DetachedDiskTypeEnum"/>
        <xs:element minOccurs="0" name="Size" nillable="true" type="ResourceCapacityType"/>
        <xs:element minOccurs="0" name="Status" type="DetachedDiskStatus"/>
        <xs:element minOccurs="0" name="PendingRetryOperation" nillable="true" type="ReferenceType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DetachedDisk" nillable="true" type="DetachedDiskType"/>
<xs:complexType name="SourceVirtualMachineType">
  <xs:sequence>
    <xs:element minOccurs="0" name="ProcessorCount" type="xs:int"/>
    <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="ReferenceType"/>
  </xs:sequence>
  <xs:attribute name="name" type="xs:string"/>
</xs:complexType>
```

```
<xs:element name="SourceVirtualMachine" nillable="true" type="SourceVirtualMachineType"/>
<xs:simpleType name="DetachedDiskTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="System"/>
    <xs:enumeration value="Data"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="DetachedDiskType" nillable="true" type="DetachedDiskTypeEnum"/>
<xs:simpleType name="DetachedDiskStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Available"/>
    <xs:enumeration value="AttachInProgress"/>
    <xs:enumeration value="DetachInProgress"/>
    <xs:enumeration value="DeleteInProgress"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="DetachedDiskStatus" nillable="true" type="DetachedDiskStatus"/>
<xs:complexType name="DetachedDisksType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfDetachedDiskResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="DetachedDisks" nillable="true" type="DetachedDisksType"/>
<xs:complexType name="ArrayOfDetachedDiskResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfDetachedDisk" Namespace=""/>
        <GenericParameter Name="DetachedDisk" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="DetachedDisk" nillable="true" 
type="DetachedDiskType"/>
```

```
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfDetachedDiskType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="DetachedDisk" nillable="true"
type="DetachedDiskType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="PerformanceStatisticType">
  <xs:sequence>
   <xs:element minOccurs="0" name="Time" type="xs:dateTime"/>
   <xs:element minOccurs="0" name="Used" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="PerformanceStatistic" nillable="true" type="PerformanceStatisticType"/>
<xs:complexType name="PerformanceStatisticsType">
  <xs:complexContent mixed="false">
   <xs:extension base="ResourceType">
    <xs:sequence>
     <xs:element minOccurs="0" name="StartTime" type="xs:dateTime"/>
     <xs:element minOccurs="0" name="EndTime" type="xs:dateTime"/>
     <xs:element minOccurs="0" name="VirtualMachines" nillable="true"
type="VirtualMachinePerformanceStatisticsType"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="PerformanceStatistics" nillable="true" type="PerformanceStatisticsType"/>
<xs:complexType name="VirtualMachinePerformanceStatisticsType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="VirtualMachine" nillable="true"
type="VirtualMachinePerformanceStatisticType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="VirtualMachinePerformanceStatistics" nillable="true"
type="VirtualMachinePerformanceStatisticsType"/>
<xs:complexType name="VirtualMachinePerformanceStatisticType">
```

```
  <xs:complexContent mixed="false">
    <xs:extension base="ReferenceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="PerformanceStatistic" nillable="true"
type="PerformanceStatisticType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="VirtualMachinePerformanceStatistic" nillable="true"
type="VirtualMachinePerformanceStatisticType"/>
<xs:complexType name="ArrayOfPerformanceStatisticType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="PerformanceStatistic" nillable="true"
type="PerformanceStatisticType"/>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="Unit">
  <xs:restriction base="xs:string">
    <xs:enumeration value="MB"/>
    <xs:enumeration value="MHz"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="Unit" nillable="true" type="Unit"/>
<xs:complexType name="CatalogType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Locations" nillable="true" type="CatalogLocationsType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="Catalog" nillable="true" type="CatalogType"/>
<xs:complexType name="CatalogLocationsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Location" nillable="true"
type="CatalogLocationType"/>
  </xs:sequence>
```

```
</xs:complexType>
<xs:element name="CatalogLocations" nillable="true" type="CatalogLocationsType"/>
<xs:complexType name="CatalogLocationType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Storage" nillable="true" type="CatalogStorageType"/>
        <xs:element minOccurs="0" name="Catalog" nillable="true" type="CatalogEntriesType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CatalogLocation" nillable="true" type="CatalogLocationType"/>
<xs:complexType name="CatalogStorageType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Capacity" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="Used" nillable="true" type="ResourceCapacityType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogStorage" nillable="true" type="CatalogStorageType"/>
<xs:complexType name="CatalogEntriesType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CatalogEntry" nillable="true"
type="CatalogEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogEntries" nillable="true" type="CatalogEntriesType"/>
<xs:complexType name="CatalogEntryType">
  <xs:complexContent mixed="false">
    <xs:extension base="EntityType">
      <xs:sequence>
        <xs:element minOccurs="0" name="Status" type="CatalogEntryStatus"/>
        <xs:element minOccurs="0" name="Alerts" nillable="true" type="CatalogAlertsType"/>
        <xs:element minOccurs="0" name="Files" nillable="true" type="CatalogItemFilesType"/>
        <xs:element minOccurs="0" name="Configuration" nillable="true" type="ReferenceType"/>
        <xs:element minOccurs="0" name="CatalogType" type="CatalogEntryTypeEnum"/>
      </xs:sequence>
    </xs:extension>
```

```
  </xs:complexContent>
</xs:complexType>
<xs:element name="CatalogEntry" nillable="true" type="CatalogEntryType"/>
<xs:simpleType name="CatalogEntryStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Active"/>
    <xs:enumeration value="Validated"/>
    <xs:enumeration value="Failed"/>
    <xs:enumeration value="Completed"/>
    <xs:enumeration value="Validating"/>
    <xs:enumeration value="Unknown"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CatalogEntryStatus" nillable="true" type="CatalogEntryStatus"/>
<xs:complexType name="CatalogAlertsType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="Alert" nillable="true"
type="CatalogAlertType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogAlerts" nillable="true" type="CatalogAlertsType"/>
<xs:complexType name="CatalogAlertType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Type" type="CatalogAlertTypeEnum"/>
    <xs:element minOccurs="0" name="Details" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogAlert" nillable="true" type="CatalogAlertType"/>
<xs:simpleType name="CatalogAlertTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Info"/>
    <xs:enumeration value="Warning"/>
    <xs:enumeration value="Error"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CatalogAlertType" nillable="true" type="CatalogAlertTypeEnum"/>
<xs:complexType name="CatalogItemFilesType">
  <xs:sequence>
```

```
    <xs:element minOccurs="0" maxOccurs="unbounded" name="File" nillable="true"
type="CatalogItemFileType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogItemFiles" nillable="true" type="CatalogItemFilesType"/>
<xs:complexType name="CatalogItemFileType">
  <xs:sequence>
    <xs:element minOccurs="0" name="UploadUrl" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
    <xs:element minOccurs="0" name="Size" nillable="true" type="ResourceCapacityType"/>
    <xs:element minOccurs="0" name="BytesTransferred" type="xs:long"/>
    <xs:element minOccurs="0" name="Status" type="FileUploadStatus"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogItemFile" nillable="true" type="CatalogItemFileType"/>
<xs:simpleType name="FileUploadStatus">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Ready"/>
    <xs:enumeration value="InProgress"/>
    <xs:enumeration value="Failed"/>
    <xs:enumeration value="Verified"/>
    <xs:enumeration value="Completed"/>
    <xs:enumeration value="Stopped"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="FileUploadStatus" nillable="true" type="FileUploadStatus"/>
<xs:simpleType name="CatalogEntryTypeEnum">
  <xs:restriction base="xs:string">
    <xs:enumeration value="Upload"/>
    <xs:enumeration value="Export"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CatalogEntryType" nillable="true" type="CatalogEntryTypeEnum"/>
<xs:complexType name="CatalogEntryConfigurationType">
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" name="ProcessorCount" type="xs:int"/>
```

```
      <xs:element minOccurs="0" name="Memory" nillable="true" type="ResourceCapacityType"/>
      <xs:element minOccurs="0" name="OperatingSystem" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Disks" nillable="true" type="DisksType"/>
      <xs:element minOccurs="0" name="NetworkAdapters" type="xs:int"/>
      <xs:element minOccurs="0" name="NetworkMappings" nillable="true"
type="CatalogNetworkMappingsType"/>
      <xs:element minOccurs="0" name="LicensedBy" type="CatalogItemLicensedBy"/>
      <xs:element minOccurs="0" name="LicenseType" type="CatalogItemLicenseTypeEnum"/>
      <xs:element minOccurs="0" name="LicenseCost" type="xs:decimal"/>
    </xs:sequence>
   </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CatalogEntryConfiguration" nillable="true" type="CatalogEntryConfigurationType"/>
<xs:complexType name="CatalogNetworkMappingsType">
  <xs:sequence>
   <xs:element minOccurs="0" maxOccurs="unbounded" name="NetworkMapping" nillable="true"
type="CatalogNetworkMappingType"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogNetworkMappings" nillable="true" type="CatalogNetworkMappingsType"/>
<xs:complexType name="CatalogNetworkMappingType">
  <xs:sequence>
   <xs:element minOccurs="0" name="Name" nillable="true" type="xs:string"/>
   <xs:element minOccurs="0" name="Description" nillable="true" type="xs:string"/>
  </xs:sequence>
</xs:complexType>
<xs:element name="CatalogNetworkMapping" nillable="true" type="CatalogNetworkMappingType"/>
<xs:simpleType name="CatalogItemLicensedBy">
  <xs:restriction base="xs:string">
   <xs:enumeration value="ServiceProvider"/>
   <xs:enumeration value="Customer"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CatalogItemLicensedBy" nillable="true" type="CatalogItemLicensedBy"/>
<xs:simpleType name="CatalogItemLicenseTypeEnum">
  <xs:restriction base="xs:string">
   <xs:enumeration value="Template"/>
```

```
    <xs:enumeration value="Custom"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="CatalogItemLicenseType" nillable="true" type="CatalogItemLicenseTypeEnum"/>
<xs:complexType name="CatalogLogType">
  <xs:complexContent mixed="false">
    <xs:extension base="ArrayOfCatalogLogEntryResourceType"/>
  </xs:complexContent>
</xs:complexType>
<xs:element name="CatalogLog" nillable="true" type="CatalogLogType"/>
<xs:complexType name="ArrayOfCatalogLogEntryResourceType">
  <xs:annotation>
    <xs:appinfo>
      <GenericType Name="{0}Resource" Namespace="" 
xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
        <GenericParameter Name="ArrayOfCatalogLogEntry" Namespace=""/>
        <GenericParameter Name="CatalogLogEntry" Namespace=""/>
      </GenericType>
    </xs:appinfo>
  </xs:annotation>
  <xs:complexContent mixed="false">
    <xs:extension base="ResourceType">
      <xs:sequence>
        <xs:element minOccurs="0" maxOccurs="unbounded" name="CatalogLogEntry" nillable="true" 
type="CatalogLogEntryType"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
<xs:complexType name="ArrayOfCatalogLogEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" maxOccurs="unbounded" name="CatalogLogEntry" nillable="true" 
type="CatalogLogEntryType"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="CatalogLogEntryType">
  <xs:sequence>
    <xs:element minOccurs="0" name="Date" type="xs:dateTime"/>
```

```
      <xs:element minOccurs="0" name="User" nillable="true" type="UserReferenceType"/>
      <xs:element minOccurs="0" name="Location" nillable="true" type="ReferenceType"/>
      <xs:element minOccurs="0" name="CatalogEntryName" nillable="true" type="xs:string"/>
      <xs:element minOccurs="0" name="Event" type="CatalogLogEvent"/>
      <xs:element minOccurs="0" name="File" nillable="true" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>
  <xs:element name="CatalogLogEntry" nillable="true" type="CatalogLogEntryType"/>
  <xs:simpleType name="CatalogLogEvent">
    <xs:restriction base="xs:string">
      <xs:enumeration value="CatalogCreated"/>
      <xs:enumeration value="CatalogDeleted"/>
      <xs:enumeration value="UploadStarted"/>
      <xs:enumeration value="UploadFinished"/>
      <xs:enumeration value="CopyServerStarted"/>
      <xs:enumeration value="CopyServerFinished"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="CatalogLogEvent" nillable="true" type="CatalogLogEvent"/>
  <xs:complexType name="CreateCatalogEntryType">
    <xs:sequence>
      <xs:element name="Location" nillable="true" type="ReferenceType"/>
    </xs:sequence>
    <xs:attribute name="name" type="xs:string" use="required"/>
  </xs:complexType>
  <xs:element name="CreateCatalogEntry" nillable="true" type="CreateCatalogEntryType"/>
</xs:schema>
```

Return to *10 Schema*.

10.2 AlertRuleGroup Type Definitions

This schema defines some basic data types used by the API.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/"
  attributeFormDefault="qualified" elementFormDefault="qualified"
  targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="anyType" nillable="true" type="xs:anyType"/>
  <xs:element name="anyURI" nillable="true" type="xs:anyURI"/>
```

```
<xs:element name="base64Binary" nillable="true" type="xs:base64Binary"/>
<xs:element name="boolean" nillable="true" type="xs:boolean"/>
<xs:element name="byte" nillable="true" type="xs:byte"/>
<xs:element name="dateTime" nillable="true" type="xs:dateTime"/>
<xs:element name="decimal" nillable="true" type="xs:decimal"/>
<xs:element name="double" nillable="true" type="xs:double"/>
<xs:element name="float" nillable="true" type="xs:float"/>
<xs:element name="int" nillable="true" type="xs:int"/>
<xs:element name="long" nillable="true" type="xs:long"/>
<xs:element name="QName" nillable="true" type="xs:QName"/>
<xs:element name="short" nillable="true" type="xs:short"/>
<xs:element name="string" nillable="true" type="xs:string"/>
<xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte"/>
<xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt"/>
<xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong"/>
<xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort"/>
<xs:element name="char" nillable="true" type="tns:char"/>
<xs:simpleType name="char">
 <xs:restriction base="xs:int"/>
</xs:simpleType>
<xs:element name="duration" nillable="true" type="tns:duration"/>
<xs:simpleType name="duration">
 <xs:restriction base="xs:duration">
  <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?"/>
  <xs:minInclusive value="-P10675199DT2H48M5.4775808S"/>
  <xs:maxInclusive value="P10675199DT2H48M5.4775807S"/>
 </xs:restriction>
</xs:simpleType>
<xs:element name="guid" nillable="true" type="tns:guid"/>
<xs:simpleType name="guid">
 <xs:restriction base="xs:string">
  <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{12}"/>
 </xs:restriction>
</xs:simpleType>
<xs:attribute name="FactoryType" type="xs:QName"/>
<xs:attribute name="Id" type="xs:ID"/>
<xs:attribute name="Ref" type="xs:IDREF"/>
```

```
</xs:schema>
```

Return to *10 Schema*.

10.3 Alert Status Type Definitions

This schema defines some basic data types used by the API.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.datacontract.org/2004/07/proxy_v20120301_Terremark.CloudApi"
  elementFormDefault="qualified"
  targetNamespace="http://schemas.datacontract.org/2004/07/proxy_v20120301_Terremark.CloudApi"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:simpleType name="AlertResolutionStatus">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Open"/>
      <xs:enumeration value="Closed"/>
      <xs:enumeration value="OneTime"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="AlertResolutionStatus" nillable="true" type="tns:AlertResolutionStatus"/>
  <xs:simpleType name="AlertType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="None"/>
      <xs:enumeration value="Alarm"/>
      <xs:enumeration value="Incident"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:element name="AlertType" nillable="true" type="tns:AlertType"/>
</xs:schema>
```

Return to *10 Schema*.

10.4 Basic Type Definitions

This schema defines some basic data types used by the API.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:tns="http://schemas.microsoft.com/2003/10/Serialization/"
  attributeFormDefault="qualified" elementFormDefault="qualified"
  targetNamespace="http://schemas.microsoft.com/2003/10/Serialization/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="anyType" nillable="true" type="xs:anyType"/>
  <xs:element name="anyURI" nillable="true" type="xs:anyURI"/>
```

```
<xs:element name="base64Binary" nillable="true" type="xs:base64Binary"/>
<xs:element name="boolean" nillable="true" type="xs:boolean"/>
<xs:element name="byte" nillable="true" type="xs:byte"/>
<xs:element name="dateTime" nillable="true" type="xs:dateTime"/>
<xs:element name="decimal" nillable="true" type="xs:decimal"/>
<xs:element name="double" nillable="true" type="xs:double"/>
<xs:element name="float" nillable="true" type="xs:float"/>
<xs:element name="int" nillable="true" type="xs:int"/>
<xs:element name="long" nillable="true" type="xs:long"/>
<xs:element name="QName" nillable="true" type="xs:QName"/>
<xs:element name="short" nillable="true" type="xs:short"/>
<xs:element name="string" nillable="true" type="xs:string"/>
<xs:element name="unsignedByte" nillable="true" type="xs:unsignedByte"/>
<xs:element name="unsignedInt" nillable="true" type="xs:unsignedInt"/>
<xs:element name="unsignedLong" nillable="true" type="xs:unsignedLong"/>
<xs:element name="unsignedShort" nillable="true" type="xs:unsignedShort"/>
<xs:element name="char" nillable="true" type="tns:char"/>
<xs:simpleType name="char">
  <xs:restriction base="xs:int"/>
</xs:simpleType>
<xs:element name="duration" nillable="true" type="tns:duration"/>
<xs:simpleType name="duration">
  <xs:restriction base="xs:duration">
    <xs:pattern value="\-?P(\d*D)?(T(\d*H)?(\d*M)?(\d*(\.\d*)?S)?)?"/>
    <xs:minInclusive value="-P10675199DT2H48M5.4775808S"/>
    <xs:maxInclusive value="P10675199DT2H48M5.4775807S"/>
  </xs:restriction>
</xs:simpleType>
<xs:element name="guid" nillable="true" type="tns:guid"/>
<xs:simpleType name="guid">
  <xs:restriction base="xs:string">
    <xs:pattern value="[\da-fA-F]{8}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{4}-[\da-fA-F]{12}"/>
  </xs:restriction>
</xs:simpleType>
<xs:attribute name="FactoryType" type="xs:QName"/>
<xs:attribute name="Id" type="xs:ID"/>
<xs:attribute name="Ref" type="xs:IDREF"/>
```

```
</xs:schema>
```

Return to *10 Schema*.

11 Call Cross-References

11.1 API Name to URL Cross-Reference 1314

11.2 API URL to Name Cross-Reference 1324

The reader may on occasion wish to quickly find a URL given the name of a call or to quickly find the name of a call given the URL. These cross-references provide a quick link back to the call reference.

11.1 API Name to URL Cross-Reference

This appendix cross references the name of the call to the relative URL for the call. The name is a link to the reference description.

Name	Relative URL	Method
Action Administrative Organizations Disable Support Access	/admin/organizations/{organization identifier}/action/disableSupportAccess	POST
Action Administrative Organizations Edit Authentication Levels	/admin/organizations/{organization identifier}/authenticationLevels	PUT
Action Administrative Organizations Edit Login Banner	/admin/organizations/{organization identifier}/loginBanner	PUT
Action Administrative Organizations Edit Password Complexity Rules	/admin/organizations/{organization identifier}/passwordComplexityRules	PUT
Action Administrative Organizations Enable Support Access	/admin/organizations/{organization identifier}/action/enableSupportAccess	POST
Action Alerts Create Rule	/admin/alertrules/alertruletemplates/{alert rule template identifier}/action/createAlertRule	POST
Action Alerts Edit Rule	/admin/alertrules/{alert rule identifier}	PUT
Action Alerts Remove Rule	/admin/alertrules/{alert rule identifier}	DELETE
Action API Keys Activate	/admin/apiKeys/{API key identifier}/action/activate	POST
Action API Keys Create	/admin/apiKeys/users/{user identifier}/action/create	POST
Action API Keys Deactivate	/admin/apiKeys/{API key identifier}/action/deactivate	POST
Action API Keys Edit	/admin/apiKeys/{API key identifier}	PUT
Action API Keys Remove	/admin/apiKeys/{API key identifier}	DELETE
Action Associations Create Device	/rnats/environments/{environment identifier}/action/createAssociation	POST
Action Associations Edit Network	/rnats/networks/{network identifier}	PUT
Action Associations Remove Device	/rnats/associations/{association identifier}	DELETE

Name	Relative URL	Method
Action Backup Internet Services Create	/backupInternetServices/environments/{environment identifier}/action/createBackupInternetService	POST
Action Backup Internet Services Edit	/backupInternetServices/{backup Internet service identifier}	PUT
Action Backup Internet Services Remove	/backupInternetServices/{backup Internet service identifier}	DELETE
Action Catalog Create	/admin/catalog/organizations/{organization identifier}/action/createCatalogEntry	POST
Action Catalog File	{URI from CatalogEntry response}	POST
Action Catalog Remove	/admin/catalog/{catalog identifier}	DELETE
Action Compute Pools Edit	/computePools/{compute pool identifier}	PUT
Action Detached Disks Edit	/detachedDisks/{detached disk identifier}	PUT
Action Detached Disks Remove	/detachedDisks/{detached disk identifier}	DELETE
Action Firewall Logs Create	/firewallLogs/environments/{environment identifier}/action/createFirewallLog	POST
Action Firewall Logs Edit	/firewallLogs/environments/{environment identifier}	PUT
Action Firewall Logs Remove	/firewallLogs/environments/{environment identifier}	DELETE
Action Firewall Rules Create	/firewallAcls/environments/{environmentId}/action/createFirewallAcl	POST
Action Firewall Rules Remove	/firewallAcls/custom/{firewall rule identifier}	DELETE
Action High Availability Routers Edit	/haRouters/{HA router identifier}	PUT
Action High Availability Routers Move	/haRouters/{HA router identifier}/action/move	POST
Action Internet Services Create	/internetServices/publicIps/{public IP identifier}/action/createInternetService	POST
Action Internet Services Create for Environment	/internetServices/environments/{environment identifier}/action/createInternetService	POST
Action Internet Services Edit	/internetServices/{Internet service identifier}	PUT
Action Internet Services Remove	/internetServices/{Internet service identifier}	DELETE
Action IP Addresses Configure Reservation	/ipAddresses/networks/{network identifier}action/configureIpReservation	POST
Action IP Addresses Reserve	/ipAddresses/networks/{network identifier}/{host IP address}/action/reserve	POST
Action IP Addresses Sync	/ipAddresses/networks/{network identifier}/{host IP address}/action/sync	POST
Action IP Addresses Unreserve	/ipAddresses/networks/{network identifier}/{host IP address}/action/unreserve	POST
Action Layout Groups Create	/layoutGroups/environments/{environment identifier}/action/createLayoutGroup	POST

Name	Relative URL	Method
Action Layout Groups Edit	/layoutGroups/{group identifier}	PUT
Action Layout Groups Order Higher	/layoutGroups/{group identifier}/action/orderHigher	POST
Action Layout Groups Order Lower	/layoutGroups/{group identifier}/action/orderLower	POST
Action Layout Groups Remove	/layoutGroups/{group identifier}	DELETE
Action Layout Rows Create	/layoutRows/environments/{environment identifier}/action/createLayoutRow	POST
Action Layout Rows Edit	/layoutRows/{row identifier}	PUT
Action Layout Rows Move Down	/layoutRows/{row identifier}/action/moveDown	POST
Action Layout Rows Move Up	/layoutRows/{row identifier}/action/moveUp	POST
Action Layout Rows Remove	/layoutRows/{row identifier}	DELETE
Action Monitors Create Default	/internetServices/{Internet service identifier}/action/createDefaultMonitor	POST
Action Monitors Create ECV	/internetServices/{Internet service identifier}/action/createEcvMonitor	POST
Action Monitors Create HTTP	/internetServices/{Internet service identifier}/action/createHttpMonitor	POST
Action Monitors Create Loopback	/internetServices/{Internet service identifier}/action/createLoopbackMonitor	POST
Action Monitors Create Ping	/internetServices/{Internet service identifier}/action/createPingMonitor	POST
Action Monitors Disable	/internetServices/{Internet service identifier}/action/disableMonitor	POST
Action Monitors Edit ECV	/internetServices/{Internet service identifier}/monitor?type=ecv	PUT
Action Monitors Edit HTTP	/internetServices/{Internet service identifier}/monitor?type=http	PUT
Action Monitors Edit Ping	/internetServices/{Internet service identifier}/monitor?type=ping	PUT
Action Monitors Enable	/internetServices/{Internet service identifier}/action/enableMonitor	POST
Action Node Services Create Backup Internet Service	/nodeServices/backupInternetServices/{backup Internet service identifier}/action/createNodeService	POST
Action Node Services Create Internet Service	/nodeServices/internetServices/{Internet service identifier}/action/createNodeService	POST
Action Node Services Edit	/nodeServices/{node service identifier}	PUT
Action Node Services Remove	/nodeServices/{node service identifier}	DELETE
Action Physical Routers Edit	/physicalRouters/{physical router identifier}	PUT
Action Physical Routers Move	/physicalRouters/{physical router identifier}/action/move	POST
Action Physical Servers Edit	/physicalServers/{physical server identifier}	PUT

Name	Relative URL	Method
Action Physical Servers Edit Assigned IP Address	/physicalServers/{physical server identifier}/assignedIps	PUT
Action Physical Servers Move	/physicalServers/{physical server identifier}/action/move	POST
Action Public IPs Activate	/publicIps/environments/{environment identifier}/action/activatePublicIp	POST
Action Public IPs Remove	/publicIps/{public IP identifier}	DELETE
Action Resources Disable Burst Memory	/computePools/{compute pool identifier}/action/disableMemoryBurst	POST
Action Resources Disable Burst Processor	/computePools/{compute pool identifier}/action/disableCpuBurst	POST
Action Resources Enable Burst Memory	/computePools/{compute pool identifier}/action/enableMemoryBurst	POST
Action Resources Enable Burst Processor	/computePools/{compute pool identifier}/action/enableCpuBurst	POST
Action Retry Operations Attach Disk by Detached Disk	/attachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry	POST
Action Retry Operations Attach Disk by Virtual Machine	/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}/action/retry	POST
Action Retry Operations Detach Disk by Detached Disk	/detachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry	POST
Action Retry Operations Detach Disk by Virtual Machine	/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}/action/retry	POST
Action Roles Create	/admin/roles/organizations/{organization identifier}/action/createRole	POST
Action Roles Disable	/admin/roles/{role identifier}/action/disable	POST
Action Roles Edit	/admin/roles/{role identifier}	PUT
Action Roles Edit User	/admin/roles/users/{user identifier}	GET
Action Roles Enable	/admin/roles/{role identifier}/action/enable	POST
Action Roles Remove	/admin/roles/{role identifier}	DELETE
Action SSH Keys Create	/admin/sshKeys/organizations/{organization identifier}/action/createSshKey	POST
Action SSH Keys Edit	/admin/sshKeys/{SSH key identifier}	PUT
Action SSH Keys Remove	/admin/sshKeys/{SSH key identifier}	DELETE
Action Storage Devices Edit	/storageDevices/{storage device identifier}	PUT
Action Storage Devices Move	/storageDevices/{storage device identifier}/action/move	POST
Action Support Tickets Create	/admin/tickets/organizations/{organization identifier}/action/createTicket	POST
Action Trusted Network Groups Create	/trustedNetworkGroups/environments/{environment identifier}/action/createTrustedNetworkGroup	POST

Name	Relative URL	Method
Action Trusted Network Groups Edit	/trustedNetworkGroups/{trusted network group identifier}	PUT
Action Trusted Network Groups Remove	/trustedNetworkGroups/{trusted network group identifier}	DELETE
Action Users Create	/admin/users/organizations/{organization identifier}/action/createUser	POST
Action Users Create API User	/admin/organizations/{organization identifier}/action/createApiUser	POST
Action Users Disable Account	/admin/users/{user identifier}/accountStatus/action/disable	POST
Action Users Disable Alerts	/admin/users/{user identifier}/alertNotification/action/disable	POST
Action Users Disable Multifactor	/admin/users/{user identifier}/multifactor/action/disable	POST
Action Users Edit	/admin/users/{user identifier}	PUT
Action Users Edit Credentials	/admin/users/{user identifier}/credentials	PUT
Action Users Enable Account	/admin/users/{user identifier}/accountStatus/action/enable	POST
Action Users Enable Alerts	/admin/users/{user identifier}/alertNotification/action/enable	POST
Action Users Enable Multifactor	/admin/users/{user identifier}/multifactor/action/enable	POST
Action Users Invite	/admin/users/organizations/{organization identifier}/action/inviteUser	POST
Action Users Remove	/admin/users/{user identifier}	DELETE
Action Users Reset Account	/admin/users/{user identifier}/accountStatus/action/reset	POST
Action Users Unlock Account	/admin/users/{user identifier}/accountStatus/action/unlock	POST
Action Virtual Machines Attach Disk	/virtualMachines/{virtual machine identifier}/hardwareConfiguration/disks/actions/attach	POST
Action Virtual Machines Create Blank	/virtualMachines/computePools/{compute pool identifier}/action/createBlankVirtualMachine	POST
Action Virtual Machines Create Copy	/virtualMachines/computePools/{compute pool identifier}/action/copyVirtualMachine	POST
Action Virtual Machines Create Copy Identical	/virtualMachines/computePools/{compute pool identifier}/action/copyIdenticalVirtualMachine	POST
Action Virtual Machines Create from Template	/virtualMachines/computePools/{compute pool identifier}/action/createVirtualMachine	POST
Action Virtual Machines Detach Disk	/virtualMachines/{virtual machine identifier}/hardwareConfiguration/disks/actions/detach	POST
Action Virtual Machines Edit	/virtualMachines/{virtual machine identifier}	PUT
Action Virtual Machines Edit Assigned IP Address	/virtualMachines/{virtual machine identifier}/assignedIps	PUT
Action Virtual Machines Edit Hardware Configuration	/virtualMachines/{virtual machine identifier}/hardwareConfiguration	PUT

Name	Relative URL	Method
Action Virtual Machines Edit Upgrade Hardware Version	/virtualMachines/{virtual machine identifier}/action/upgradeHardware	POST
Action Virtual Machines Export	/virtualMachines/{virtual machine identifier}/action/export	POST
Action Virtual Machines Guest File	/virtualMachines/{virtual machine identifier}/guest/action/files?path={filePath}	POST
Action Virtual Machines Guest Process	/virtualMachines/{virtual machine identifier}/guest/action/createProcess	POST
Action Virtual Machines Import	/virtualMachines/computePools/{compute pool identifier}/action/importVirtualMachine	POST
Action Virtual Machines Move	/virtualMachines/{virtual machine identifier}/action/move	POST
Action Virtual Machines Power Off	/virtualMachines/{virtual machine identifier}/action/powerOff	POST
Action Virtual Machines Power On	/virtualMachines/{virtual machine identifier}/action/powerOn	POST
Action Virtual Machines Power Reboot	/virtualMachines/{virtual machine identifier}/action/reboot	POST
Action Virtual Machines Power Shutdown	/virtualMachines/{virtual machine identifier}/action/shutdown	POST
Action Virtual Machines Remove	/virtualMachines/{virtual machine identifier}	DELETE
Action Virtual Machines Tools Install	/virtualMachines/{virtual machine identifier}/tools/action/install	POST
Action Virtual Machines Tools Mount	/virtualMachines/{virtual machine identifier}/tools/action/mount	POST
Action Virtual Machines Tools Unmount	/virtualMachines/{virtual machine identifier}/tools/action/mount	POST
Get Administrative Organizations	/admin/organizations	POST
Get Administrative Organizations Authentication Levels	/admin/organizations/{organization identifier}/authenticationLevels	GET
Get Administrative Organizations by ID	/admin/organizations/{organization identifier}	GET
Get Administrative Organizations Login Banner	/admin/organizations/{organization identifier}/loginBanner	GET
Get Administrative Organizations Password Complexity Rules	/admin/organizations/{organization identifier}/passwordComplexityRules	GET
Get Alerts Log	/alerts/organizations/{organization identifier}	GET
Get Alerts Log by ID	/alerts/{alert identifier}	GET
Get Alerts Log Events	/alerts/{alert identifier}/events	GET

Name	Relative URL	Method
Get Alerts Notifications	/admin/alertNotifications/organizations/{organization identifier}	GET
Get Alerts Rule Templates	/alertRuleTemplates/	GET
Get Alerts Rule Templates by ID	/alertRuleTemplates/{alert rule template identifier}	GET
Get Alerts Rules	/admin/alertRules/organizations/{organization identifier}	GET
Get Alerts Rules by ID	/admin/alertRules/{alert rule identifier}	GRT
Get API Keys	/admin/apiKeys/users/{user identifier}	GET
Get API Keys by ID	/admin/apiKeys/{API key identifier}	GET
Get Associations by ID	/rnats/associations/{association identifier}	GET
Get Audit Logs	/admin/organizations/{organization identifier}/auditLog	GET
Get Backup Internet Services	/backupInternetServices/environments/{environment identifier}	GET
Get Backup Internet Services by ID	/backupInternetServices/{backup Internet service identifier}	GET
Get Bandwidth Period	/admin/bandwidth/organizations/{organization identifier}/periods	GET
Get Bandwidth Usage	/admin/bandwidth/organizations/{organization identifier}/usage/{4 digit year}/{1 to 2 digit period month}	GET
Get Business Operations	/admin/roles/organizations/{organization identifier}/businessOperations	GET
Get Business Operations by ID	/admin/roles/businessOperations/{business operation identifier}	GET
Get Catalog	/admin/catalog/organizations/{organization identifier}	GET
Get Catalog by ID	/admin/catalog/{catalog identifier}	GET
Get Catalog by Location	/admin/catalog/organizations/{organization identifier}/locations/{location identifier}	GET
Get Catalog Configuration	/admin/catalog/{catalog identifier}/configuration	GET
Get Catalog Log	/admin/catalog/organizations/{organization identifier}/log	GET
Get Compute Pools	/computePools/environments/{environment identifier}	GET
Get Compute Pools by ID	/computePools/{compute pool identifier}	GET
Get Contacts	/admin/contacts/organizations/{organization identifier}	GET
Get Contacts by ID	/admin/contacts/{contact identifier}	GET
Get Detached Disks	/detachedDisks/computePools/{compute pool identifier}	GET
Get Detached Disks by ID	/detachedDisks/{detached disk identifier}	GET
Get Environments	/environments/organizations/{organization identifier}	GET
Get Environments by ID	/environments/{environment identifier}	GET
Get Firewall Logs	/firewallLogs/environments/{environment identifier}	GET
Get Firewall Rules	/firewallAcls/environments/{environment identifier}	GET
Get Firewall Rules Custom	/firewallAcls/custom/{firewall rule identifier}	GET
Get Firewall Rules Node Service	/firewallAcls/nodeServices/{node service identifier}	GET
Get High Availability Routers by ID	/haRouters/{HA router identifier}	GET
Get Internet Services by ID	/internetServices/{Internet service identifier}	GET
Get IP Addresses by ID	/ipAddresses/networks/{network identifier}/{host IP address}	GET

Name	Relative URL	Method
Get Layout Groups by ID	/layoutGroups/{group identifier}	GET
Get Layout Rows by ID	/layoutRows/{row identifier}	GET
Get Layouts	/layout/environments/{environment identifier}	GET
Get Layouts by Compute Pool	/layout/computePools/{compute pool identifier}	GET
Get Locations by ID	/locations/{location identifier}	GET
Get Monitors by Internet Service	/internetServices/{Internet service identifier}/monitor	GET
Get Network Hosts	/networkHosts/environments/{environment identifier}	GET
Get Network Hosts by ID	/networkHosts/{network host identifier}	GET
Get Network Summary	/networkSummary/environments/{environment identifier}	GET
Get Networks	/networks/environments/{environment identifier}	GET
Get Networks by ID	/networks/{network identifier}	GET
Get Node Services by ID	/nodeServices/{node service identifier}	GET
Get Operating System Families	/operatingSystemFamilies/computePools/{compute pool identifier}	GET
Get Operating Systems by ID	/operatingSystems/{operating system short name}/computePools/{compute pool identifier}	GET
Get Organizations	/organizations	GET
Get Organizations by ID	/organizations/{organization identifier}	GET
Get Physical Devices	/physicalDevices/environments/{environment identifier}	GET
Get Physical Routers by ID	/physicalRouters/{physical router identifier}	GET
Get Physical Servers by ID	/physicalServers/{physical server identifier}	GET
Get Public IPs	/publicIps/environments/{environment identifier}	GET
Get Public IPs by ID	/publicIps/{public IP identifier}	GET
Get Resources Performance Statistics	/computePools/{compute pool identifier}/performanceStatistics	GET
Get Resources Performance Statistics Memory Daily	/computePools/{compute pool identifier}/usage/memory/ … performanceStatistics/daily?startTime={startTime}&endTime={endTime}	GET
Get Resources Performance Statistics Memory Hourly	/computePools/{compute pool identifier}/usage/memory/ … performanceStatistics/hourly?startTime={startTime}&endTime={endTime}	GET
Get Resources Performance Statistics Processor Daily	/computePools/{compute pool identifier}/usage/cpu/ … performanceStatistics/daily?startTime={startTime}&endTime={endTime}	GET
Get Resources Performance Statistics Processor Hourly	/computePools/{compute pool identifier}/usage/cpu/ … performanceStatistics/hourly?startTime={startTime}&endTime={endTime}	GET
Get Resources Summary	/computePools/{compute pool identifier}/resourceSummary	GET
Get Resources Summary List	/computePools/environments/{environment identifier}/resourceSummaryList	GET

Name	Relative URL	Method
Get Resources Usage Memory	/computePools/{compute pool identifier}/usage/memory	GET
Get Resources Usage Memory Detail	/computePools/{compute pool identifier}/usage/memory/details?time={time}	GET
Get Resources Usage Processor	/computePools/{compute pool identifier}/usage/cpu	GET
Get Resources Usage Processor Detail	/computePools/{compute pool identifier}/usage/cpu/details?time={time}	GET
Get Resources Usage Storage	/computePools/{compute pool identifier}/usage/storage	GET
Get Retry Operations Attach Disk by Detached Disk	/attachDiskRetryOperations/detachedDisks/{detached disk identifier}	GET
Get Retry Operations Attach Disk by Virtual Machine	/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}	GET
Get Retry Operations Detach Disk by Detached Disk	/detachDiskRetryOperations/detachedDisks/{detached disk identifier}	GET
Get Retry Operations Detach Disk by Virtual Machine	/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}	GET
Get RNATs	/rnats/environments/{environment identifier}	GET
Get RNATs by ID	/rnats/{public IP identifier}	GET
Get RNATs Network	/rnats/networks/{network identifier}	GET
Get Roles	/admin/roles/organizations/{organization identifier}	GET
Get Roles by ID	/admin/roles/{role identifier}	GET
Get Roles by User	/admin/roles/users/{user identifier}	GET
Get SSH Keys	/admin/sshKeys/organizations/{organization identifier}	GET
Get SSH Keys by ID	/admin/sshKeys/{SSH key identifier}	GET
Get Storage Devices by ID	/storageDevices/{storage device identifier}	GET
Get Support Tickets	/admin/tickets/organizations/{organization identifier}	GET
Get Support Tickets Active	/admin/tickets/organizations/{organization identifier}/active	GET
Get Support Tickets by ID	/admin/tickets/{ticket identifier}	GET
Get Support Tickets History	/admin/tickets/organizations/{organization identifier}/history	GET
Get Tags	/deviceTags/organizations/{organization identifier}	GET
Get Tasks	/tasks/environments/{environment identifier}	GET
Get Tasks by Detached Disk	/tasks/detachedDisks/{detached disk identifier}	GET
Get Tasks by High Availability Router	/tasks/haRouters/{physical router identifier}	GET
Get Tasks by ID	/tasks/{task identifier}	GET
Get Tasks by Physical Router	/tasks/physicalRouters/{physical router identifier}	GET

Name	Relative URL	Method
Get Tasks by Physical Server	/tasks/physicalServers/{physical server identifier}	GET
Get Tasks by Storage Device	/tasks/storageDevices/{storage device identifier}	GET
Get Tasks by Virtual Machine	/tasks/virtualMachines/{virtual machine identifier}	GET
Get Templates	/templates/computePools/{compute pool identifier}	GET
Get Templates by ID	/templates/{template identifier}/computePools/{compute pool identifier}	GET
Get Time	/time/	GET
Get Trusted Network Groups	/trustedNetworkGroups/environments/{environment identifier}	GET
Get Trusted Network Groups by ID	/trustedNetworkGroups/{trusted network group identifier}	GET
Get Users	/admin/users/organizations/{organization identifier}	GET
Get Users by ID	/admin/users/{user identifier}	GET
Get Users Credentials	/admin/users/{user identifier}/credentials	GET
Get Users Security Questions	/admin/users/securityQuestions	GET
Get Versions	/versions/	GET
Get Virtual Machines	/virtualMachines/computePools/{compute pool identifier}	GET
Get Virtual Machines Assigned IP Addresses	/virtualMachines/{virtual machine identifier}/assignedIps	GET
Get Virtual Machines by ID	/virtualMachines/{virtual machine identifier}	GET
Get Virtual Machines Configuration Options	/virtualMachines/{virtual machine identifier}/configurationOptions	GET
Get Virtual Machines Guest File	/virtualMachines/{virtual machine identifier}/guest/action/files?path={file path and name}	GET
Get Virtual Machines Guest Processes	/virtualMachines/{virtual machine identifier}/guest/processes	GET
Get Virtual Machines Hardware Configuration	/virtualMachines/{virtual machine identifier}/hardwareConfiguration	GET
Get Virtual Machines MKS Ticket	/virtualMachines/{virtual machine identifier}/mksTicket	GET

Return to *11 Call Cross-References*.

11.2 API URL to Name Cross-Reference

This appendix cross references the relative URL for the call to the name of the call. The name is a link to the reference description.

Relative URL	Method	Name
/admin/alertNotifications/organizations/{organization identifier}	GET	Get Alerts Notifications
/admin/alertrules/{alert rule identifier}	DELETE	Action Alerts Remove Rule
/admin/alertRules/{alert rule identifier}	GRT	Get Alerts Rules by ID
/admin/alertrules/{alert rule identifier}	PUT	Action Alerts Edit Rule
/admin/alertrules/alertruletemplates/{alert rule template identifier}/action/createAlertRule	POST	Action Alerts Create Rule
/admin/alertRules/organizations/{organization identifier}	GET	Get Alerts Rules
/admin/apiKeys/{API key identifier}	DELETE	Action API Keys Remove
/admin/apiKeys/{API key identifier}	GET	Get API Keys by ID
/admin/apiKeys/{API key identifier}	PUT	Action API Keys Edit
/admin/apiKeys/{API key identifier}/action/activate	POST	Action API Keys Activate
/admin/apiKeys/{API key identifier}/action/deactivate	POST	Action API Keys Deactivate
/admin/apiKeys/users/{user identifier}	GET	Get API Keys
/admin/apiKeys/users/{user identifier}/action/create	POST	Action API Keys Create
/admin/bandwidth/organizations/{organization identifier}/periods	GET	Get Bandwidth Period
/admin/bandwidth/organizations/{organization identifier}/usage/{4 digit year}/{1 to 2 digit period month}	GET	Get Bandwidth Usage
/admin/catalog/{catalog identifier}	DELETE	Action Catalog Remove
/admin/catalog/{catalog identifier}	GET	Get Catalog by ID
/admin/catalog/{catalog identifier}/configuration	GET	Get Catalog Configuration
/admin/catalog/organizations/{organization identifier}	GET	Get Catalog
/admin/catalog/organizations/{organization identifier}/action/createCatalogEntry	POST	Action Catalog Create
/admin/catalog/organizations/{organization identifier}/locations/{location identifier}	GET	Get Catalog by Location
/admin/catalog/organizations/{organization identifier}/log	GET	Get Catalog Log
/admin/contacts/{contact identifier}	GET	Get Contacts by ID
/admin/contacts/organizations/{organization identifier}	GET	Get Contacts
/admin/organizations	POST	Get Administrative Organizations
/admin/organizations/{organization identifier}	GET	Get Administrative Organizations by ID
/admin/organizations/{organization identifier}/action/createApiUser	POST	Action Users Create API User
/admin/organizations/{organization identifier}/action/disableSupportAccess	POST	Action Administrative Organizations Disable Support Access

Relative URL	Method	Name
/admin/organizations/{organization identifier}/action/enableSupportAccess	POST	Action Administrative Organizations Enable Support Access
/admin/organizations/{organization identifier}/action/inviteUser	POST	Action Users Invite
/admin/organizations/{organization identifier}/auditLog	GET	Get Audit Logs
/admin/organizations/{organization identifier}/authenticationLevels	GET	Get Administrative Organizations Authentication Levels
/admin/organizations/{organization identifier}/authenticationLevels	PUT	Action Administrative Organizations Edit Authentication Levels
/admin/organizations/{organization identifier}/loginBanner	GET	Get Administrative Organizations Login Banner
/admin/organizations/{organization identifier}/loginBanner	PUT	Action Administrative Organizations Edit Login Banner
/admin/organizations/{organization identifier}/passwordComplexityRules	GET	Get Administrative Organizations Password Complexity Rules
/admin/organizations/{organization identifier}/passwordComplexityRules	PUT	Action Administrative Organizations Edit Password Complexity Rules
/admin/roles/{role identifier}	DELETE	Action Roles Remove
/admin/roles/{role identifier}	GET	Get Roles by ID
/admin/roles/{role identifier}	PUT	Action Roles Edit
/admin/roles/{role identifier}/action/disable	POST	Action Roles Disable
/admin/roles/{role identifier}/action/enable	POST	Action Roles Enable
/admin/roles/businessOperations/{business operation identifier}	GET	Get Business Operations by ID
/admin/roles/organizations/{organization identifier}	GET	Get Roles
/admin/roles/organizations/{organization identifier}/action/createRole	POST	Action Roles Create
/admin/roles/organizations/{organization identifier}/businessOperations	GET	Get Business Operations
/admin/roles/users/{user identifier}	GET	Get Roles by User
/admin/roles/users/{user identifier}	GET	Action Roles Edit User
/admin/sshKeys/{SSH key identifier}	DELETE	Action SSH Keys Remove
/admin/sshKeys/{SSH key identifier}	GET	Get SSH Keys by ID
/admin/sshKeys/{SSH key identifier}	PUT	Action SSH Keys Edit
/admin/sshKeys/organizations/{organization identifier}	GET	Get SSH Keys
/admin/sshKeys/organizations/{organization identifier}/action/createSshKey	POST	Action SSH Keys Create
/admin/tickets/{ticket identifier}	GET	Get Support Tickets by ID
/admin/tickets/organizations/{organization identifier}	GET	Get Support Tickets

Relative URL	Method	Name
/admin/tickets/organizations/{organization identifier}/action/createTicket	POST	Action Support Tickets Create
/admin/tickets/organizations/{organization identifier}/active	GET	Get Support Tickets Active
/admin/tickets/organizations/{organization identifier}/history	GET	Get Support Tickets History
/admin/users/{user identifier}	DELETE	Action Users Remove
/admin/users/{user identifier}	GET	Get Users by ID
/admin/users/{user identifier}	PUT	Action Users Edit
/admin/users/{user identifier}/accountStatus/action/disable	POST	Action Users Disable Account
/admin/users/{user identifier}/accountStatus/action/enable	POST	Action Users Enable Account
/admin/users/{user identifier}/accountStatus/action/reset	POST	Action Users Reset Account
/admin/users/{user identifier}/accountStatus/action/unlock	POST	Action Users Unlock Account
/admin/users/{user identifier}/alertNotification/action/disable	POST	Action Users Disable Alerts
/admin/users/{user identifier}/alertNotification/action/enable	POST	Action Users Enable Alerts
/admin/users/{user identifier}/credentials	GET	Get Users Credentials
/admin/users/{user identifier}/credentials	PUT	Action Users Edit Credentials
/admin/users/{user identifier}/multifactor/action/disable	POST	Action Users Disable Multifactor
/admin/users/{user identifier}/multifactor/action/enable	POST	Action Users Enable Multifactor
/admin/users/organizations/{organization identifier}	GET	Get Users
/admin/users/organizations/{organization identifier}/action/createUser	POST	Action Users Create
/admin/users/securityQuestions	GET	Get Users Security Questions
/alertRuleTemplates/	GET	Get Alerts Rule Templates
/alertRuleTemplates/{alert rule template identifier}	GET	Get Alerts Rule Templates by ID
/alerts/{alert identifier}	GET	Get Alerts Log by ID
/alerts/{alert identifier}/events	GET	Get Alerts Log Events
/alerts/organizations/{organization identifier}	GET	Get Alerts Log
/attachDiskRetryOperations/detachedDisks/{detached disk identifier}	GET	Get Retry Operations Attach Disk by Detached Disk
/attachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry	POST	Action Retry Operations Attach Disk by Detached Disk
/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}	GET	Get Retry Operations Attach Disk by Virtual Machine

Relative URL	Method	Name
/attachDiskRetryOperations/virtualMachines/{virtual machine identifier}/action/retry	POST	Action Retry Operations Attach Disk by Virtual Machine
/backupInternetServices/{backup Internet service identifier}	DELETE	Action Backup Internet Services Remove
/backupInternetServices/{backup Internet service identifier}	GET	Get Backup Internet Services by ID
/backupInternetServices/{backup Internet service identifier}	PUT	Action Backup Internet Services Edit
/backupInternetServices/environments/{environment identifier}	GET	Get Backup Internet Services
/backupInternetServices/environments/{environment identifier}/action/createBackupInternetService	POST	Action Backup Internet Services Create
/computePools/{compute pool identifier}	GET	Get Compute Pools by ID
/computePools/{compute pool identifier}	PUT	Action Compute Pools Edit
/computePools/{compute pool identifier}/action/disableCpuBurst	POST	Action Resources Disable Burst Processor
/computePools/{compute pool identifier}/action/disableMemoryBurst	POST	Action Resources Disable Burst Memory
/computePools/{compute pool identifier}/action/enableCpuBurst	POST	Action Resources Enable Burst Processor
/computePools/{compute pool identifier}/action/enableMemoryBurst	POST	Action Resources Enable Burst Memory
/computePools/{compute pool identifier}/performanceStatistics	GET	Get Resources Performance Statistics
/computePools/{compute pool identifier}/resourceSummary	GET	Get Resources Summary
/computePools/{compute pool identifier}/usage/cpu	GET	Get Resources Usage Processor
/computePools/{compute pool identifier}/usage/cpu/ … performanceStatistics/daily?startTime={startTime}&endTime={endTime}	GET	Get Resources Performance Statistics Processor Daily
/computePools/{compute pool identifier}/usage/cpu/ … performanceStatistics/hourly?startTime={startTime}&endTime={endTime}	GET	Get Resources Performance Statistics Processor Hourly
/computePools/{compute pool identifier}/usage/cpu/details?time={time}	GET	Get Resources Usage Processor Detail
/computePools/{compute pool identifier}/usage/memory	GET	Get Resources Usage Memory
/computePools/{compute pool identifier}/usage/memory/ … performanceStatistics/daily?startTime={startTime}&endTime={endTime}	GET	Get Resources Performance Statistics Memory Daily
/computePools/{compute pool identifier}/usage/memory/ … performanceStatistics/hourly?startTime={startTime}&endTime={endTime}	GET	Get Resources Performance Statistics Memory Hourly

Relative URL	Method	Name
/computePools/{compute pool identifier}/usage/memory/details?time={time}	GET	Get Resources Usage Memory Detail
/computePools/{compute pool identifier}/usage/storage	GET	Get Resources Usage Storage
/computePools/environments/{environment identifier}	GET	Get Compute Pools
/computePools/environments/{environment identifier}/resourceSummaryList	GET	Get Resources Summary List
/detachDiskRetryOperations/detachedDisks/{detached disk identifier}	GET	Get Retry Operations Detach Disk by Detached Disk
/detachDiskRetryOperations/detachedDisks/{detached disk identifier}/action/retry	POST	Action Retry Operations Detach Disk by Detached Disk
/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}	GET	Get Retry Operations Detach Disk by Virtual Machine
/detachDiskRetryOperations/virtualMachines/{virtual machine identifier}/action/retry	POST	Action Retry Operations Detach Disk by Virtual Machine
/detachedDisks/{detached disk identifier}	DELETE	Action Detached Disks Remove
/detachedDisks/{detached disk identifier}	GET	Get Detached Disks by ID
/detachedDisks/{detached disk identifier}	PUT	Action Detached Disks Edit
/detachedDisks/computePools/{compute pool identifier}	GET	Get Detached Disks
/deviceTags/organizations/{organization identifier}	GET	Get Tags
/environments/{environment identifier}	GET	Get Environments by ID
/environments/organizations/{organization identifier}	GET	Get Environments
/firewallAcls/custom/{firewall rule identifier}	DELETE	Action Firewall Rules Remove
/firewallAcls/custom/{firewall rule identifier}	GET	Get Firewall Rules Custom
/firewallAcls/environments/{environment identifier}	GET	Get Firewall Rules
/firewallAcls/environments/{environmentId}/action/createFirewallAcl	POST	Action Firewall Rules Create
/firewallAcls/nodeServices/{node service identifier}	GET	Get Firewall Rules Node Service
/firewallLogs/environments/{environment identifier}	DELETE	Action Firewall Logs Remove
/firewallLogs/environments/{environment identifier}	GET	Get Firewall Logs
/firewallLogs/environments/{environment identifier}	PUT	Action Firewall Logs Edit
/firewallLogs/environments/{environment identifier}/action/createFirewallLog	POST	Action Firewall Logs Create
/haRouters/{HA router identifier}	GET	Get High Availability Routers by ID

Relative URL	Method	Name
/haRouters/{HA router identifier}	PUT	Action High Availability Routers Edit
/haRouters/{HA router identifier}/action/move	POST	Action High Availability Routers Move
/internetServices/{Internet service identifier}	DELETE	Action Internet Services Remove
/internetServices/{Internet service identifier}	GET	Get Internet Services by ID
/internetServices/{Internet service identifier}	PUT	Action Internet Services Edit
/internetServices/{Internet service identifier}/action/createDefaultMonitor	POST	Action Monitors Create Default
/internetServices/{Internet service identifier}/action/createEcvMonitor	POST	Action Monitors Create ECV
/internetServices/{Internet service identifier}/action/createHttpMonitor	POST	Action Monitors Create HTTP
/internetServices/{Internet service identifier}/action/createLoopbackMonitor	POST	Action Monitors Create Loopback
/internetServices/{Internet service identifier}/action/createPingMonitor	POST	Action Monitors Create Ping
/internetServices/{Internet service identifier}/action/disableMonitor	POST	Action Monitors Disable
/internetServices/{Internet service identifier}/action/enableMonitor	POST	Action Monitors Enable
/internetServices/{Internet service identifier}/monitor	GET	Get Monitors by Internet Service
/internetServices/{Internet service identifier}/monitor?type=ecv	PUT	Action Monitors Edit ECV
/internetServices/{Internet service identifier}/monitor?type=http	PUT	Action Monitors Edit HTTP
/internetServices/{Internet service identifier}/monitor?type=ping	PUT	Action Monitors Edit Ping
/internetServices/environments/{environment identifier}/action/createInternetService	POST	Action Internet Services Create for Environment
/internetServices/publicIps/{public IP identifier}/action/createInternetService	POST	Action Internet Services Create
/ipAddresses/networks/{network identifier}/{host IP address}	GET	Get IP Addresses by ID
/ipAddresses/networks/{network identifier}/{host IP address}/action/sync	POST	Action IP Addresses Sync
/ipAddresses/networks/{network identifier}/{host IP address}/action/reserve	POST	Action IP Addresses Reserve
/ipAddresses/networks/{network identifier}/{host IP address}/action/unreserve	POST	Action IP Addresses Unreserve
/ipAddresses/networks/{network identifier}action/configureIpReservation	POST	Action IP Addresses Configure Reservation
/layout/computePools/{compute pool identifier}	GET	Get Layouts by Compute Pool
/layout/environments/{environment identifier}	GET	Get Layouts
/layoutGroups/{group identifier}	DELETE	Action Layout Groups Remove

Relative URL	Method	Name
/layoutGroups/{group identifier}	GET	Get Layout Groups by ID
/layoutGroups/{group identifier}	PUT	Action Layout Groups Edit
/layoutGroups/{group identifier}/action/orderHigher	POST	Action Layout Groups Order Higher
/layoutGroups/{group identifier}/action/orderLower	POST	Action Layout Groups Order Lower
/layoutGroups/environments/{environment identifier}/action/createLayoutGroup	POST	Action Layout Groups Create
/layoutRows/{row identifier}	DELETE	Action Layout Rows Remove
/layoutRows/{row identifier}	GET	Get Layout Rows by ID
/layoutRows/{row identifier}	PUT	Action Layout Rows Edit
/layoutRows/{row identifier}/action/moveDown	POST	Action Layout Rows Move Down
/layoutRows/{row identifier}/action/moveUp	POST	Action Layout Rows Move Up
/layoutRows/environments/{environment identifier}/action/createLayoutRow	POST	Action Layout Rows Create
/locations/{location identifier}	GET	Get Locations by ID
/networkHosts/{network host identifier}	GET	Get Network Hosts by ID
/networkHosts/environments/{environment identifier}	GET	Get Network Hosts
/networks/{network identifier}	GET	Get Networks by ID
/networks/environments/{environment identifier}	GET	Get Networks
/networkSummary/environments/{environment identifier}	GET	Get Network Summary
/nodeServices/{node service identifier}	DELETE	Action Node Services Remove
/nodeServices/{node service identifier}	GET	Get Node Services by ID
/nodeServices/{node service identifier}	PUT	Action Node Services Edit
/nodeServices/backupInternetServices/{backup Internet service identifier}/action/createNodeService	POST	Action Node Services Create Backup Internet Service
/nodeServices/internetServices/{Internet service identifier}/action/createNodeService	POST	Action Node Services Create Internet Service
/operatingSystemFamilies/computePools/{compute pool identifier}	GET	Get Operating System Families
/operatingSystems/{operating system short name}/computePools/{compute pool identifier}	GET	Get Operating Systems by ID
/organizations	GET	Get Organizations
/organizations/{organization identifier}	GET	Get Organizations by ID
/physicalDevices/environments/{environment identifier}	GET	Get Physical Devices
/physicalRouters/{physical router identifier}	GET	Get Physical Routers by ID
/physicalRouters/{physical router identifier}	PUT	Action Physical Routers Edit

Relative URL	Method	Name
/physicalRouters/{physical router identifier}/action/move	POST	Action Physical Routers Move
/physicalServers/{physical server identifier}	GET	Get Physical Servers by ID
/physicalServers/{physical server identifier}	PUT	Action Physical Servers Edit
/physicalServers/{physical server identifier}/action/move	POST	Action Physical Servers Move
/physicalServers/{physical server identifier}/assignedIps	PUT	Action Physical Servers Edit Assigned IP Address
/publicIps/{public IP identifier}	DELETE	Action Public IPs Remove
/publicIps/{public IP identifier}	GET	Get Public IPs by ID
/publicIps/environments/{environment identifier}	GET	Get Public IPs
/publicIps/environments/{environment identifier}/action/activatePublicIp	POST	Action Public IPs Activate
/rnats/{public IP identifier}	GET	Get RNATs by ID
/rnats/associations/{association identifier}	DELETE	Action Associations Remove Device
/rnats/associations/{association identifier}	GET	Get Associations by ID
/rnats/environments/{environment identifier}	GET	Get RNATs
/rnats/environments/{environment identifier}/action/createAssociation	POST	Action Associations Create Device
/rnats/networks/{network identifier}	GET	Get RNATs Network
/rnats/networks/{network identifier}	PUT	Action Associations Edit Network
/storageDevices/{storage device identifier}	GET	Get Storage Devices by ID
/storageDevices/{storage device identifier}	PUT	Action Storage Devices Edit
/storageDevices/{storage device identifier}/action/move	POST	Action Storage Devices Move
/tasks/{task identifier}	GET	Get Tasks by ID
/tasks/detachedDisks/{detached disk identifier}	GET	Get Tasks by Detached Disk
/tasks/environments/{environment identifier}	GET	Get Tasks
/tasks/haRouters/{physical router identifier}	GET	Get Tasks by High Availability Router
/tasks/physicalRouters/{physical router identifier}	GET	Get Tasks by Physical Router
/tasks/physicalServers/{physical server identifier}	GET	Get Tasks by Physical Server
/tasks/storageDevices/{storage device identifier}	GET	Get Tasks by Storage Device
/tasks/virtualMachines/{virtual machine identifier}	GET	Get Tasks by Virtual Machine
/templates/{template identifier}/computePools/{compute pool identifier}	GET	Get Templates by ID
/templates/computePools/{compute pool identifier}	GET	Get Templates
/time/	GET	Get Time

Relative URL	Method	Name
/trustedNetworkGroups/{trusted network group identifier}	DELETE	Action Trusted Network Groups Remove
/trustedNetworkGroups/{trusted network group identifier}	GET	Get Trusted Network Groups by ID
/trustedNetworkGroups/{trusted network group identifier}	PUT	Action Trusted Network Groups Edit
/trustedNetworkGroups/environments/{environment identifier}	GET	Get Trusted Network Groups
/trustedNetworkGroups/environments/{environment identifier}/action/createTrustedNetworkGroup	POST	Action Trusted Network Groups Create
/versions/	GET	Get Versions
/virtualMachines/{virtual machine identifier}	DELETE	Action Virtual Machines Remove
/virtualMachines/{virtual machine identifier}	GET	Get Virtual Machines by ID
/virtualMachines/{virtual machine identifier}	PUT	Action Virtual Machines Edit
/virtualMachines/{virtual machine identifier}/action/export	POST	Action Virtual Machines Export
/virtualMachines/{virtual machine identifier}/action/move	POST	Action Virtual Machines Move
/virtualMachines/{virtual machine identifier}/action/powerOff	POST	Action Virtual Machines Power Off
/virtualMachines/{virtual machine identifier}/action/powerOn	POST	Action Virtual Machines Power On
/virtualMachines/{virtual machine identifier}/action/reboot	POST	Action Virtual Machines Power Reboot
/virtualMachines/{virtual machine identifier}/action/shutdown	POST	Action Virtual Machines Power Shutdown
/virtualMachines/{virtual machine identifier}/action/upgradeHardware	POST	Action Virtual Machines Edit Upgrade Hardware Version
/virtualMachines/{virtual machine identifier}/assignedIps	GET	Get Virtual Machines Assigned IP Addresses
/virtualMachines/{virtual machine identifier}/assignedIps	PUT	Action Virtual Machines Edit Assigned IP Address
/virtualMachines/{virtual machine identifier}/configurationOptions	GET	Get Virtual Machines Configuration Options
/virtualMachines/{virtual machine identifier}/guest/action/createProcess	POST	Action Virtual Machines Guest Process
/virtualMachines/{virtual machine identifier}/guest/action/files?path={file path and name}	GET	Get Virtual Machines Guest File
/virtualMachines/{virtual machine identifier}/guest/action/files?path={filePath}	POST	Action Virtual Machines Guest File

Relative URL	Method	Name
/virtualMachines/{virtual machine identifier}/guest/processes	GET	Get Virtual Machines Guest Processes
/virtualMachines/{virtual machine identifier}/hardwareConfiguration	GET	Get Virtual Machines Hardware Configuration
/virtualMachines/{virtual machine identifier}/hardwareConfiguration/disks/actions/detach	POST	Action Virtual Machines Detach Disk
/virtualMachines/{virtual machine identifier}/hardwareConfiguration/disks/actions/attach	POST	Action Virtual Machines Attach Disk
/virtualMachines/{virtual machine identifier}/hardwareConfiguration	PUT	Action Virtual Machines Edit Hardware Configuration
/virtualMachines/{virtual machine identifier}/mksTicket	GET	Get Virtual Machines MKS Ticket
/virtualMachines/{virtual machine identifier}/tools/action/install	POST	Action Virtual Machines Tools Install
/virtualMachines/{virtual machine identifier}/tools/action/mount	POST	Action Virtual Machines Tools Mount
/virtualMachines/{virtual machine identifier}/tools/action/mount	POST	Action Virtual Machines Tools Unmount
/virtualMachines/computePools/{compute pool identifier}	GET	Get Virtual Machines
/virtualMachines/computePools/{compute pool identifier}/action/copyIdenticalVirtualMachine	POST	Action Virtual Machines Create Copy Identical
/virtualMachines/computePools/{compute pool identifier}/action/copyVirtualMachine	POST	Action Virtual Machines Create Copy
/virtualMachines/computePools/{compute pool identifier}/action/createBlankVirtualMachine	POST	Action Virtual Machines Create Blank
/virtualMachines/computePools/{compute pool identifier}/action/createVirtualMachine	POST	Action Virtual Machines Create from Template
/virtualMachines/computePools/{compute pool identifier}/action/importVirtualMachine	POST	Action Virtual Machines Import
{URI from CatalogEntry response}	POST	Action Catalog File

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