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# Enterprise Cloud Application Programming Interface Cloud API Explorer

*Version 2012-03-01*

## Revision History

03 March 2012

Original Release

Comments and corrections are welcomed; please email to: [ssddocumentation@terremark.com](mailto:ssddocumentation@terremark.com)

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## 1 Before You Begin

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 the *Enterprise Cloud Application Programming Interface* for the version you are using. Document for the API is available on the Terremark Enterprise Cloud Knowledgebase at:

<http://support.theenterprisecloud.com/kb/default.asp?id=1035&Lang=1&SID=>

### 1.1 Become Familiar with Key Concepts

The reader is encouraged to carefully review the introductory sections of the *Enterprise Cloud Application Programming Interface*, sections 1 through 5, before delving into the API. 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* of the *Enterprise Cloud Application Programming Interface* 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.

### 1.2 Begin a New API Session

After reading section 3 *Security Model* of the *Enterprise Cloud Application Programming Interface*, 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*.

### 1.3 Enter the API

As discussed in 4 *Call Concepts* of the *Enterprise Cloud Application Programming Interface*, 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*.

## 2 Getting Started with Cloud API Explorer

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

### 2.1 Cloud API Explorer URL

The Cloud API Explorer is available in a directory under the base Terremark URI. It resides at:

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

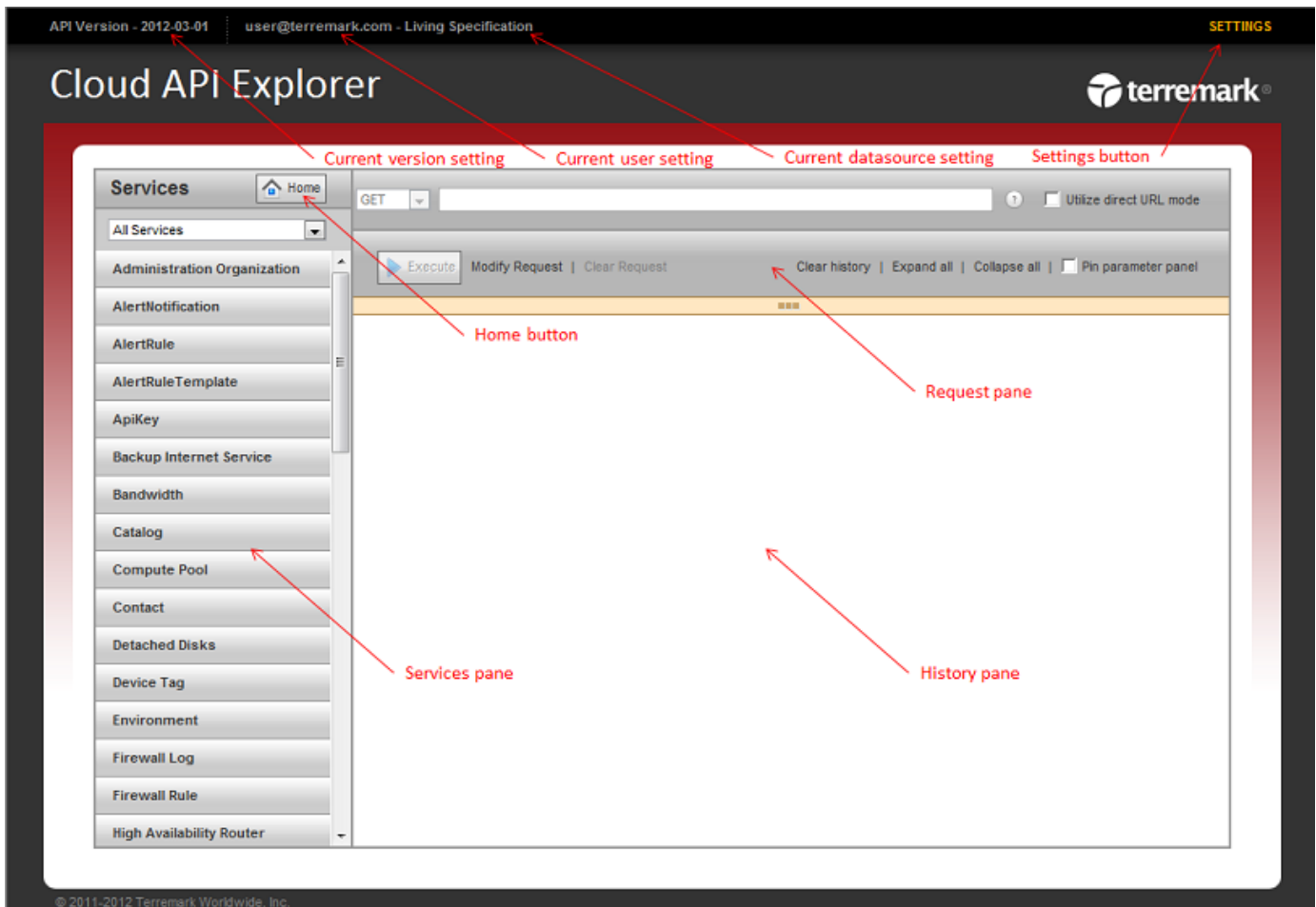
Enter this Uniform Resource Locator (URL) in your browser and the Cloud API Explorer opens.

### 2.2 Cloud API Explorer Window

When the Cloud API Explorer first opens, by default it logs into the Live Specification with the credentials of the sample user with administrator permissions.

As a convenience to Application Programming Interface users, Terremark has 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. See section 5.3 *Live Specification of the Enterprise Cloud Application Programming Interface* for more information regarding the Live Specification.

The major components of the Cloud API Explorer window are shown below.



Across the top of the window is the current working profile. In the upper left are the version setting, the user setting, and the data source. The data source is presented as either "Living Specification," when accessing the Live Specification static data, or the name of the organization to which the user belongs, when accessing live organizational data.

**Note:** If one selects organizational data, changes made in the Cloud API Explorer session *will* alter organizational data.

In the upper right is the "Settings" button by which the version, user, data source, and authentication method may be changed. See section 5.6 *Authentication* of the *Enterprise Cloud Application Programming Interface* for more information regarding authentication methods.

On the left side of the window is the Services pane. The services pane shows all of the application services within the Enterprise Cloud. Under each service are the API calls for that service.

A click on the "Home" button issues the starting call for the Enterprise Cloud API: a retrieval of organizations. See section 7.2.1 *Get Organizations* of the *Enterprise Cloud Application Programming Interface* for more information regarding the call.

The upper portion of the right hand side is the Request pane. In this pane the API call may be constructed. If one follows the links in the response, the Request pane is automatically populated.

The lower portion of the right hand side is the History pane. The requests and responses to each call are displayed in this pane. All calls during the session are retained in this pane unless cleared.

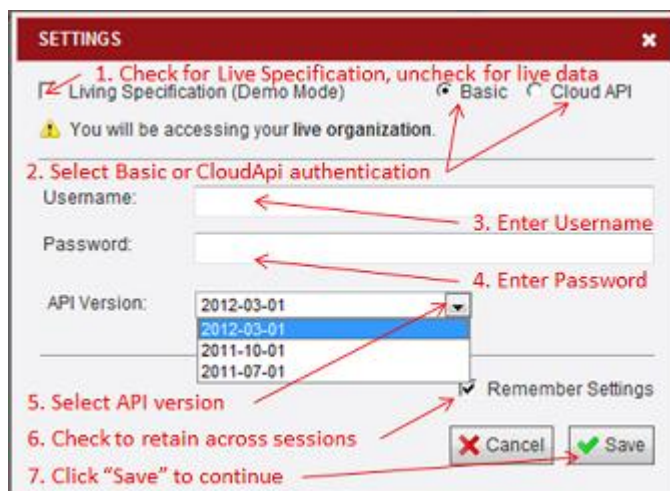
## 2.3 Changing Settings

To change any of the settings, the version, user, data source, or authentication method, click the "Settings" button in the upper right. The settings dialog box will open.

### 2.3.1 Basic Authentication

This example shows the Settings dialog box when entering credentials for Basic authentication.

**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 authentication acceptability.



The screenshot shows a 'SETTINGS' dialog box with the following elements and annotations:

- 1. Check for Live Specification, uncheck for live data:** Points to the 'Living Specification (Demo Mode)' checkbox, which is checked.
- 2. Select Basic or CloudApi authentication:** Points to the 'Basic' radio button, which is selected.
- 3. Enter Username:** Points to the 'Username:' text input field.
- 4. Enter Password:** Points to the 'Password:' text input field.
- 5. Select API version:** Points to the 'API Version:' dropdown menu, which shows a list of dates: 2012-03-01, 2012-03-01, 2011-10-01, and 2011-07-01.
- 6. Check to retain across sessions:** Points to the 'Remember Settings' checkbox, which is checked.
- 7. Click "Save" to continue:** Points to the 'Save' button.

1. Check the Living Specification (Demo Mode) box to use the active demonstration data, uncheck to use live organizational data; Live Specification data in this example.

**Note:** If one selects the organizational data source, the caution note appears to remind you that changes made in the Cloud API Explorer session will alter organizational data.

2. Select "Basic" or Cloud API authentication; Basic in this example.
3. Enter the Username of a valid user.

4. Enter the Password of that valid user.

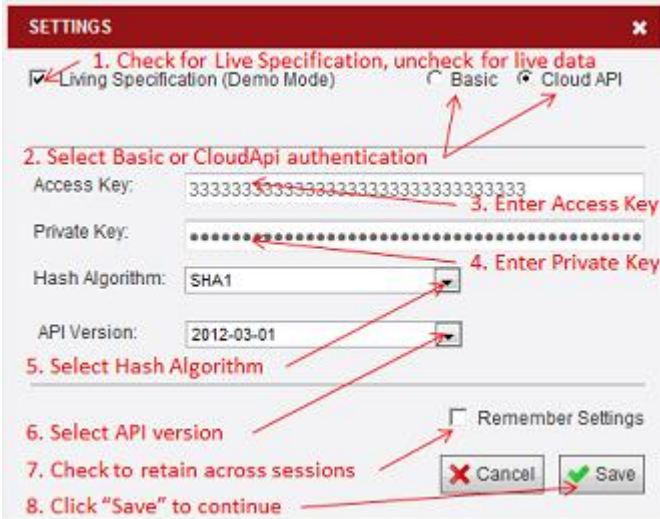
**Note:** If one selects the Live Specification data source, the Username and Password are populated with the credentials of the sample user with administrator permissions for the convenience of the user.

5. Select an API Version from the dropdown list.
6. Check the Remember Settings box to retain the selections on this dialog box across browser sessions, uncheck to remove the selections and start fresh each time; retain in this example.
7. Click "Save" to return to the Cloud API Explorer.

### 2.3.2 Cloud API Authentication

This example shows the Settings dialog box when entering credentials for Cloud API authentication. See 5.6 *Authentication of the Enterprise Cloud Application Programming Interface* for more information regarding Access Keys, Private Keys, and Hash Algorithms.

**Note:** The acceptable hash algorithms may be constrained by an organization. Such constraints are not reflected on the dropdown list. 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.



1. Check the Living Specification (Demo Mode) box to use the active demonstration data, uncheck to use live organizational data; organizational data in this example.

**Note:** If one selects the organizational data source, the caution note appears to remind you that changes made in the Cloud API Explorer session will alter organizational data.

2. Select "Basic" or "Cloud API" authentication; "Cloud API" in this example.
3. Enter the Access Key of a valid user.



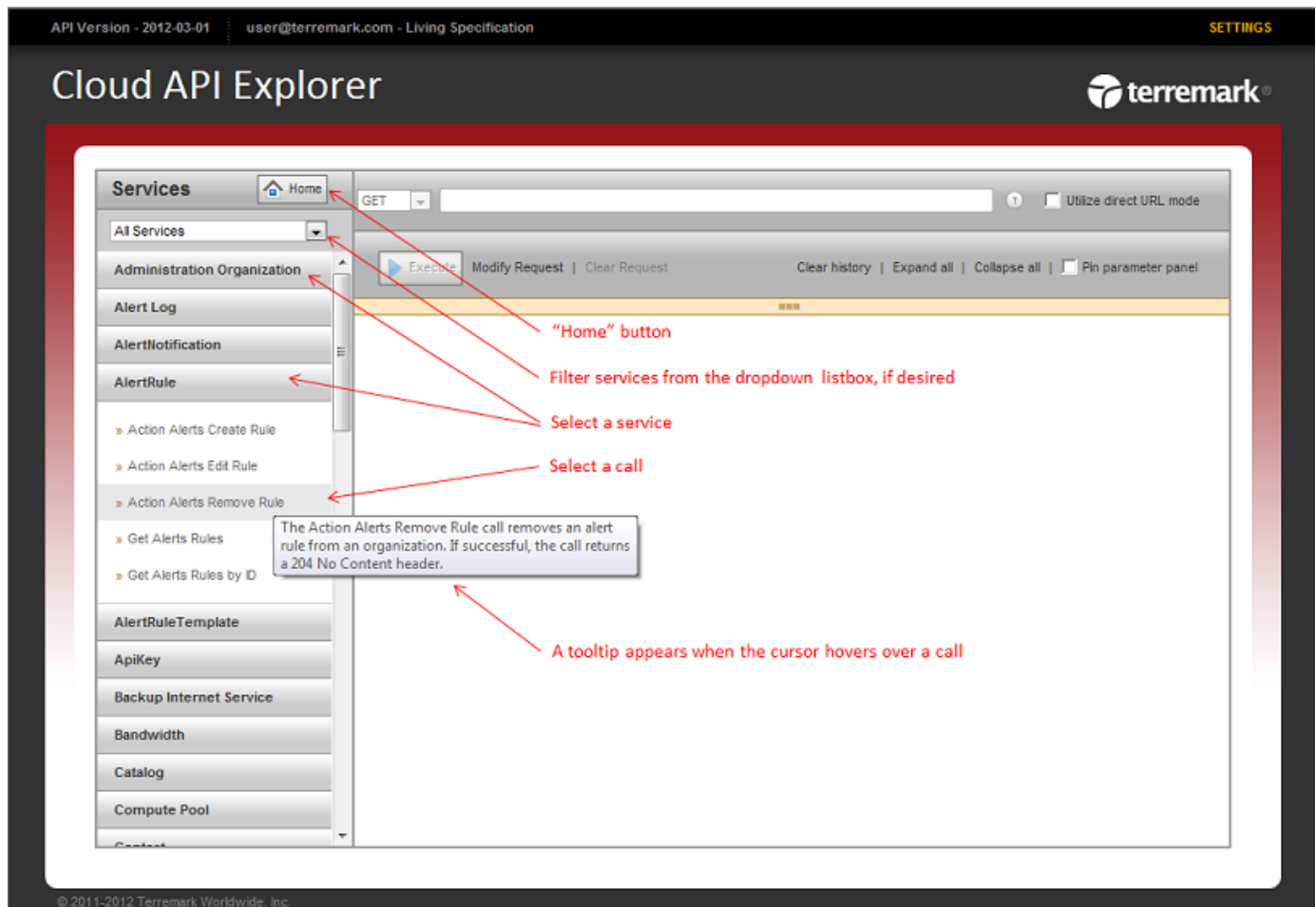
4. Enter the Private Key of that valid user.

**Note:** If one selects the Live Specification data source, the Access Key and Private Key are populated with the credentials of the sample user with administrator permissions for the convenience of the user.

5. Select a Hash Algorithm from the dropdown list.
6. Select an API Version from the dropdown list.
7. Check "Remember Settings" to retain the selections on this dialog box across browser sessions, uncheck to remove the selections and start fresh each time; remove in this example.
8. Click "Save" to return to the Cloud API Explorer.

### 3 Services Pane

The Services pane shows the services within the API. The services are based on divisions within the application. While most services parallel the entities in the *Enterprise Cloud Application Programming Interface*, some variations occur. For example, calls for the entity "Monitors," as discussed in section 7.26 *Monitors* of the *Enterprise Cloud Application Programming Interface*, are located in the Internet Service service of the Cloud API Explorer.



The list of services may be filtered from the dropdown list, if desired. The services may be filtered by:

- Device; services equivalent to the Devices tab of the Infinicenter Console
- Environment; services equivalent to the Resources tab and the layout on the Devices tab of the Infinicenter Console
- Network; services equivalent to the Network tab of the Infinicenter Console
- Organization; services equivalent to the My Accounts tab of the Infinicenter Console and services supporting the API

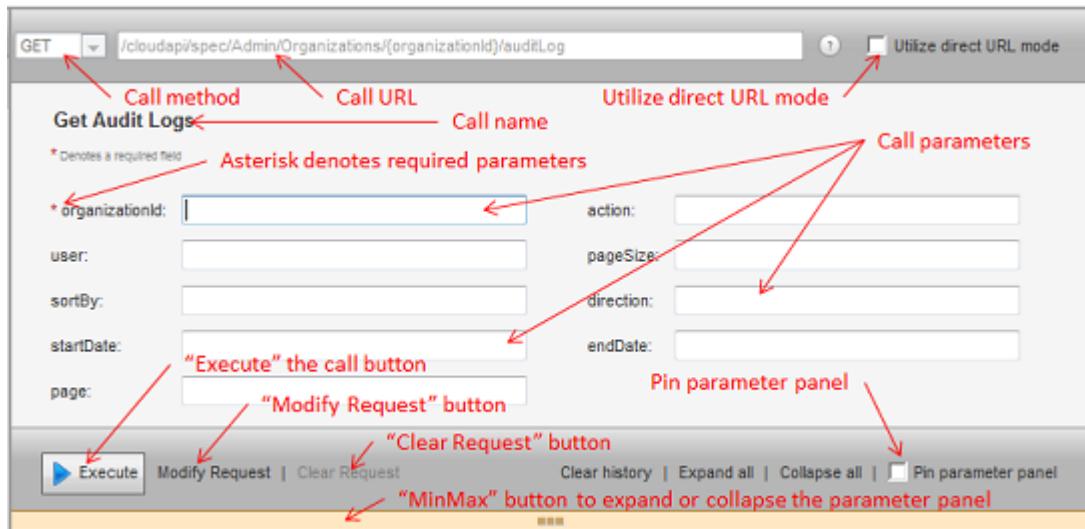
Click the "Home" button and the Cloud API Explorer executes the **Get Organization's** call, the entry point for the API.

Click on a service name and the list of available calls in that service opens. The names of all calls are the same as the names used in the *Enterprise Cloud Application Programming Interface*.

When the cursor hovers over a call, a tooltip opens with the introductory paragraph for the call from the *Enterprise Cloud Application Programming Interface*.

## 4 Request Pane

The request pane assists the user in crafting API calls. The request pane has many features.



### 4.1 Call Bar

Across the top is the call bar with the call method and call URL. If the Cloud API Explorer is not in direct URL mode, by unchecking the "Utilize direct URL mode" checkbox, the call method and call URL are inaccessible.

### 4.2 Parameter Panel

Beneath the call bar is the parameter panel. The name of the call shown is the same as the name in the *Enterprise Cloud Application Programming Interface*. Every parameter permitted by the call is in the parameter panel. Required parameters are denoted by a preceding red asterisk. If the Cloud API Explorer is in direct URL mode, by checking the "Utilize direct URL mode" checkbox, the parameter panel is inaccessible.

### 4.3 Control Bar

Beneath the parameter panel is the control bar. When all is ready with the constructed call, press the "Execution" button to send the call to the Enterprise Cloud. The "Modify Request" button opens the Add Request Header and Body dialog box, which permits the user to:

- Enter or change the request body.
- Add or modify request header fields.

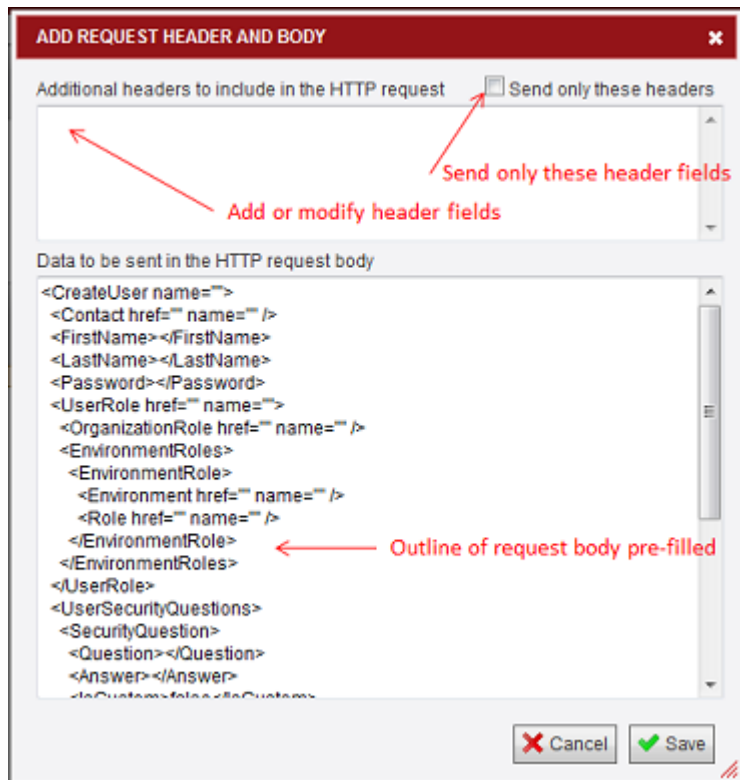
The "Clear Request" button clears the existing request body and any added or modified header fields.

Across the bottom of the control bar is the "MinMax" button that opens or closes the parameter panel. If the Cloud API Explorer is in direct URL mode, enabled by checking the "Utilize direct URL mode" checkbox, this button is inoperable and the parameter panel is inaccessible.

The "Pin parameter panel" checkbox controls the behavior of the Parameter panel upon execution. By default, unchecked, the parameter closes upon execution to maximize space on the History pane. By checking the checkbox, the parameter panel will remain open after execution. Even with "Pin parameter panel" checked, the "MinMax" button will still open and close the parameter panel.

#### 4.4 Add Request Header and Body Dialog Box

Clicking the "Modify Request" button opens the Add Request Header and Body dialog box. The dialog box may be resized to enlarge the viewing area.



The lower text box, "Data to be sent in the HTTP request body," is pre-filled with an outline of the XML body for the call, if any is required. The content of this text box is ignored for GET calls; the GET method does not permit a body. For specifics of requirements and contents, consult the call in section 7 *Application Programming Interface Reference Guide* of the *Enterprise Cloud Application Programming Interface*.

The upper text box, "Additional headers to include in the HTTP request," permits adding new header fields or overriding the value of default header fields. The default header fields are: x-tmrk-version, x-tmrk-date, and Authorization for all calls with Content-Type and Content-Length added for calls requiring a body (calls with a

method of PUT or POST). With "Send only these headers" checked, the behavior is to send only the headers in the text box and none of the default headers. With "Send only these headers" unchecked, the behavior is to:

- Add any header fields present in the text box and not present in the default header fields.
- Replace any header fields present in both the text box and the default header fields.

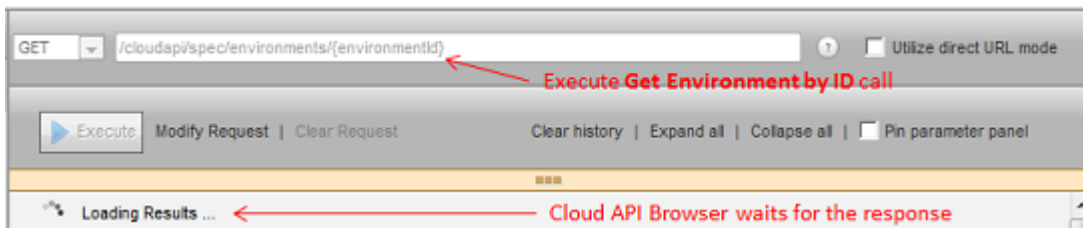
Adding header fields is useful for calls such as **Action Virtual Machines Guest Process**, a call that runs a command in the guest operating system of the virtual machine. Credentials of a user authorized to perform the command are passed to the guest operating system via the API using the x-Guest-User and x-Guest-Password header fields. By placing these header fields and their appropriate values in the header field text box and leaving "Send only these headers" unchecked, these header fields required by the call are passed by the Cloud API Explorer.

Replacing header fields is useful for changing a default header field for just one call. A quick check of the behavior of a call in a different version of the API can be performed by placing the x-tmrk-version header field with that version value in the header field text box. The default value is then overridden by the replacement value.

**Note:** The contents of the current Add Request Header and Body request is ignored when the "Home" button is used. The "Home" button always uses the default headers and, as it executes a GET, the body is always ignored.

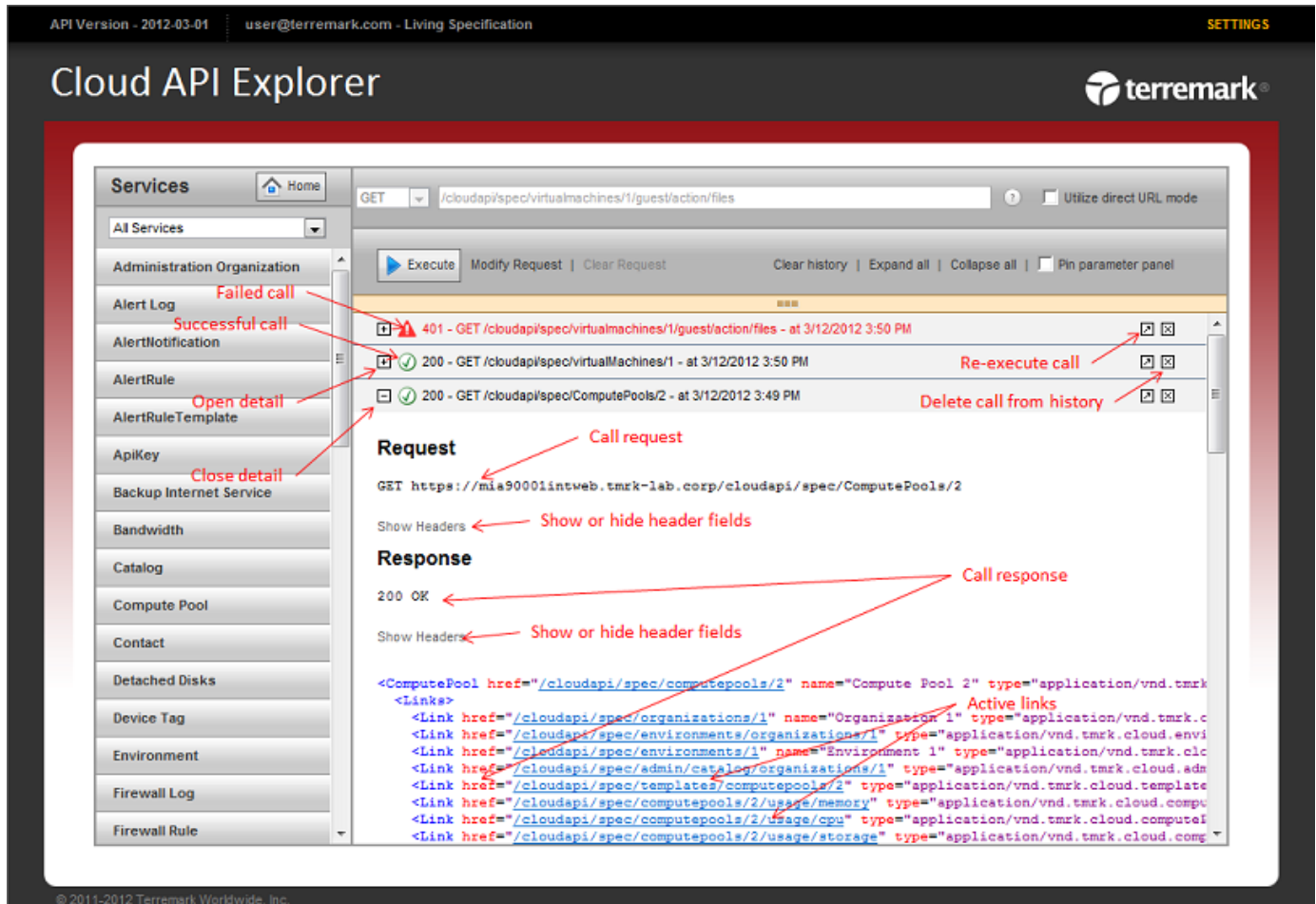
## 4.5 Executing

Once a call has been executed the Cloud API Explorer indicates that the request was issued and awaits the response.



## 5 History Pane

The History pane displays the history of calls in the session.



API Version - 2012-03-01 | user@terremark.com - Living Specification | SETTINGS

### Cloud API Explorer

Services: All Services | Administration Organization | Alert Log | AlertNotification | AlertRule | AlertRuleTemplate | ApiKey | Backup Internet Service | Bandwidth | Catalog | Compute Pool | Contact | Detached Disks | Device Tag | Environment | Firewall Log | Firewall Rule

GET /cloudapi/spec/virtualmachines/1/guest/action/files

Execute | Modify Request | Clear Request | Clear history | Expand all | Collapse all | Pin parameter panel

401 - GET /cloudapi/spec/virtualmachines/1/guest/action/files - at 3/12/2012 3:50 PM

200 - GET /cloudapi/spec/virtualmachines/1 - at 3/12/2012 3:50 PM

200 - GET /cloudapi/spec/ComputePools/2 - at 3/12/2012 3:49 PM

**Request**

GET https://mia90001intweb.tmrk-lab.corp/cloudapi/spec/ComputePools/2

Show Headers

**Response**

200 OK

Show Headers

<ComputePool href="/cloudapi/spec/computePools/2" name="Compute Pool 2" type="application/vnd.tmrk.cloud.computePool">

<Links>

<Link href="/cloudapi/spec/organizations/1" name="Organization 1" type="application/vnd.tmrk.cloud.organization">

<Link href="/cloudapi/spec/environments/organization/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment">

<Link href="/cloudapi/spec/admin/catalog/organizations/1" name="Environment 1" type="application/vnd.tmrk.cloud.admin.catalog">

<Link href="/cloudapi/spec/templates/computePools/2" type="application/vnd.tmrk.cloud.template">

<Link href="/cloudapi/spec/computePools/2/usage/memory" type="application/vnd.tmrk.cloud.computePool.usage.memory">

<Link href="/cloudapi/spec/computePools/2/usage/cpu" type="application/vnd.tmrk.cloud.computePool.usage.cpu">

<Link href="/cloudapi/spec/computePools/2/usage/storage" type="application/vnd.tmrk.cloud.computePool.usage.storage">

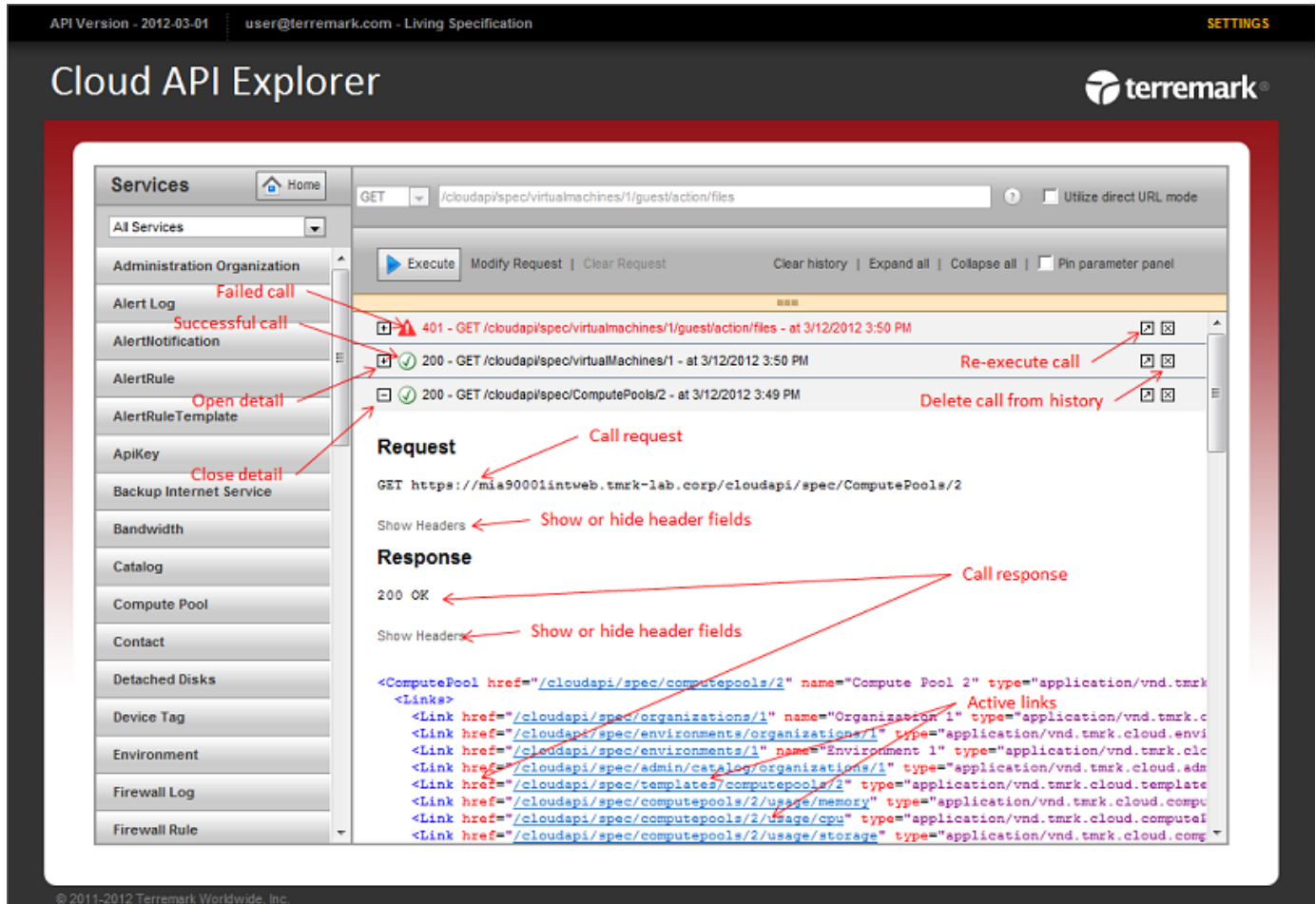
### 5.1 Call Heading

The call heading shows the HTTP response code for the call, the call method, the call URL, and the time the call was made. Additionally, on each call heading are several controls:

- The red exclamation mark with red text indicates a failed call.
- The green check mark with black text indicates a successful call.
- The plus in a square opens the details for that call.
- The minus in a square closes the details for that call.
- The arrow in a square executes that call again.
- The X in a square deletes that call from the History pane.

## 5.2 Call Detail

Under the call heading, when opened, is the call detail.



API Version - 2012-03-01 | user@terremark.com - Living Specification | SETTINGS

### Cloud API Explorer

Services: All Services | Administration Organization | Alert Log | AlertNotification | AlertRule | AlertRuleTemplate | ApiKey | Backup Internet Service | Bandwidth | Catalog | Compute Pool | Contact | Detached Disks | Device Tag | Environment | Firewall Log | Firewall Rule

GET /cloudapi/spec/virtualmachines/1/guest/action/files

Execute | Modify Request | Clear Request | Clear history | Expand all | Collapse all | Pin parameter panel

Call history:

- 401 - GET /cloudapi/spec/virtualmachines/1/guest/action/files - at 3/12/2012 3:50 PM
- 200 - GET /cloudapi/spec/virtualmachines/1 - at 3/12/2012 3:50 PM
- 200 - GET /cloudapi/spec/ComputePools/2 - at 3/12/2012 3:49 PM

Re-execute call | Delete call from history

**Request**

GET https://mia90001intweb.tmrk-1ab.corp/cloudapi/spec/ComputePools/2

Show Headers

**Response**

200 OK

Show Headers

```
<ComputePool href="/cloudapi/spec/computePools/2" name="Compute Pool 2" type="application/vnd.tmrk.c">
  <links>
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1" type="application/vnd.tmrk.c">
    <Link href="/cloudapi/spec/environments/organizations/1" type="application/vnd.tmrk.cloud.envi">
    <Link href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.c">
    <Link href="/cloudapi/spec/admin/catalog/organizations/1" type="application/vnd.tmrk.cloud.adm">
    <Link href="/cloudapi/spec/templates/computePools/2" type="application/vnd.tmrk.cloud.template">
    <Link href="/cloudapi/spec/computePools/2/usage/memory" type="application/vnd.tmrk.cloud.compute">
    <Link href="/cloudapi/spec/computePools/2/usage/cpu" type="application/vnd.tmrk.cloud.compute">
    <Link href="/cloudapi/spec/computePools/2/usage/storage" type="application/vnd.tmrk.cloud.com">
```

In the call detail under "Request," the call method and call URL are repeated. Clicking the "Show Headers" button displays the header fields sent with the call. Clicking the "Hide Headers" button will hide the header fields.

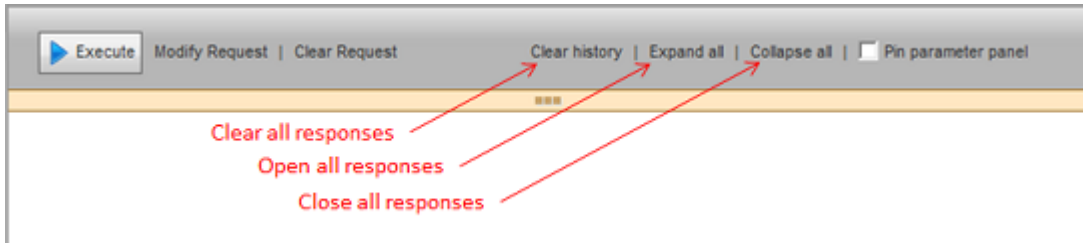
In the call detail under "Response," the HTTP response code is shown. Clicking the "Show Headers" button displays the header fields returned with the response. Clicking the "Hide Headers" button will hide the header fields. Then the response body is shown; indented to make the structure easier to read. The response body is color-coded:

- Elements are blue.
- Element values are black.
- Attributes are red.
- Attribute values, other than a href attribute, are magenta.
- HTTP reference (href) attribute values are active links and underlined; if never followed they are cyan, if followed they are magenta.



If one clicks a link, the Cloud API Explorer enters the method, URL, and required parameters in the request pane, opens the Add Request Header and Body dialog box if the method is PUT or POST, and executes the call.

### 5.3 Control Bar History Buttons



The control bar history buttons govern the display of the call history. Click the "Clear history" button to remove every call from the History pane. Click the "Expand all" button to open the details of every call in the History pane. Click the "Collapse all" button to close the details of every call in the History pane.

## 6 Using the Cloud API Explorer

The Cloud API Explorer supports three methods of use:

- Browser Mode: Follow the links in the responses to navigate from the home call to the desired result.
- Assisted Mode: Select the desired call, fill the desired parameters and body, if required, and execute.
- Direct URL Mode: Select the method, enter the completed URL, and execute.

The methods are not restrictive, the user may freely move between the different methods at any time. To demonstrate each method of use, the examples will create an Internet service using the Live Specification.

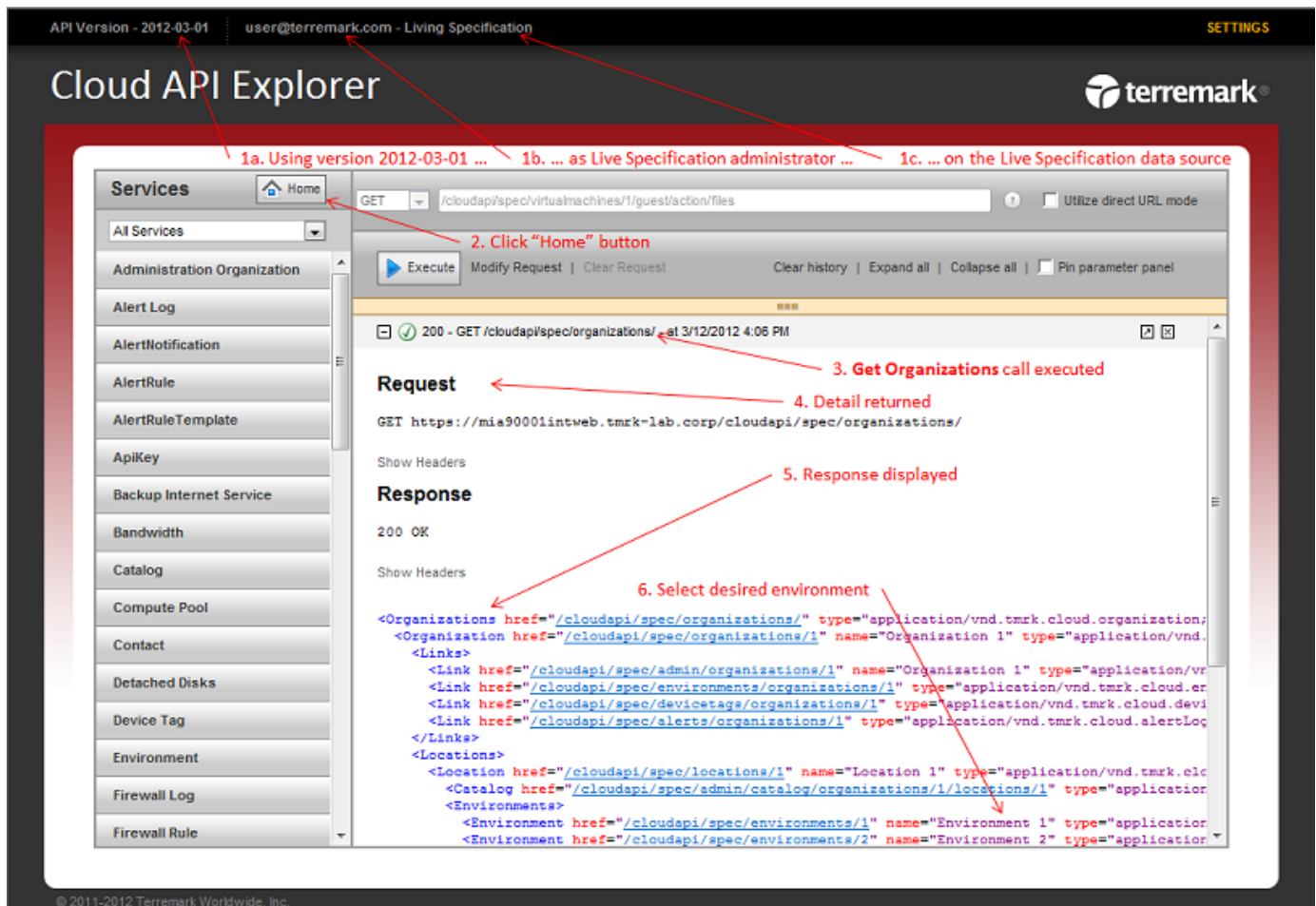
### 6.1 Browse Mode

In browse mode, the user begins with clicking the "Home" button and follows the links to the desired result. Section 6 *Application Programming Interface Programmer's Guide* of the *Enterprise Cloud Application Programming Interface* can easily be followed with the browse method. This section follows the steps of section 6.10.1 *Create an Internet Service* of the *Enterprise Cloud Application Programming Interface* to present the example.

**Note:** With each link followed, the Cloud API Explorer fills the parameter panel from the link. Opening the parameter panel will reveal the filled-in parameter fields.

#### 6.1.1 Step 1: Get Organizations

**Get Organizations** is the call issued by the "Home" button.



The screenshot shows the Cloud API Explorer interface. At the top, it displays 'API Version - 2012-03-01' and 'user@terremark.com - Living Specification'. The main header is 'Cloud API Explorer' with the 'terremark' logo. On the left is a 'Services' sidebar with a 'Home' button. The main area shows a GET request to '/cloudapi/spec/virtualmachines/1/guest/action/files'. Below this, a '200 - GET /cloudapi/spec/organizations/' response is shown with its details and XML body. Red arrows and numbers 1 through 6 point to specific elements: 1a points to the API version, 1b to the user, 1c to the data source, 2 to the Home button, 3 to the executed request, 4 to the returned details, 5 to the displayed response, and 6 to a link in the XML response body.

1. Using version 2012-03-01 as the Live Specification administrator on the Live Specification data source.
2. Click the "Home" button.
3. The **Get Organizations** call executes.
4. The call details are returned in the History pane.
5. The response is displayed in the History pane.
6. Select the desired environment.

### 6.1.2 Step 2: Get Environments

Click the link of the desired environment and the **Get Environments** call is executed with the parameters for the desired environment.

**Response**

200 OK

Show Headers

```
<Organizations href="/cloudapi/spec/organizations/" type="application/vnd.tmrk.cloud.organizations;
<Organization href="/cloudapi/spec/organizations/1" name="Organization 1" type="application/vnd.
  <Links>
    <Link href="/cloudapi/spec/admin/organizations/1" name="Organization 1" type="application/vr
    <Link href="/cloudapi/spec/environments/organizations/1" type="application/vnd.tmrk.cloud.er
    <Link href="/cloudapi/spec/devicetags/organizations/1" type="application/vnd.tmrk.cloud.devi
  </Links>
  <Locations>
    <Location href="/cloudapi/spec/locations/1" name="Location 1" type="application/vnd.tmrk.clo
    <Catalog href="/cloudapi/spec/admin/catalog/organizations/1/locations/1" type="application
    <Environments>
      <Environment href="/cloudapi/spec/environments/1" name="Environment 1" type="application
      <Environment href="/cloudapi/spec/environments/2" name="Environment 2" type="application
    </Environments>
```

1. Click desired environment link

1. Click the href link on the desired environment.

200 - GET /cloudapi/spec/environments/1 at 2/9/2012 10:51 AM

**Request**

GET https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/environments/1

Show Headers

**Response**

200 OK

Show Headers

```
<Environment href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.
  <Links>
    <Link href="/cloudapi/spec/locations/1" name="Location 1" type="application/vnd.tmrk.cloud.loc
    <Link href="/cloudapi/spec/organizations/1" name="Organization 1" type="application/vnd.tmrk.c
    <Link href="/cloudapi/spec/layout/environments/1" type="application/vnd.tmrk.cloud.deviceLayou
    <Link href="/cloudapi/spec/physicaldevices/environments/1" type="application/vnd.tmrk.cloud.ph
    <Link href="/cloudapi/spec/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=c
    <Link href="/cloudapi/spec/networks/environments/1" type="application/vnd.tmrk.cloud.network;
    <Link href="/cloudapi/spec/networksummary/environments/1" type="application/vnd.tmrk.cloud.env
    <Link href="/cloudapi/spec/resourcesummary/computeools/environments/1" type="application/vnd.
    <Link href="/cloudapi/spec/computeools/environments/1" type="application/vnd.tmrk.cloud.comp
  </links>
  <Tasks href="/cloudapi/spec/tasks/environments/1" type="application/vnd.tmrk.cloud.task; type=cc
  <Links>
```

2. Get Environments call executed

3. Detail returned

4. Response displayed

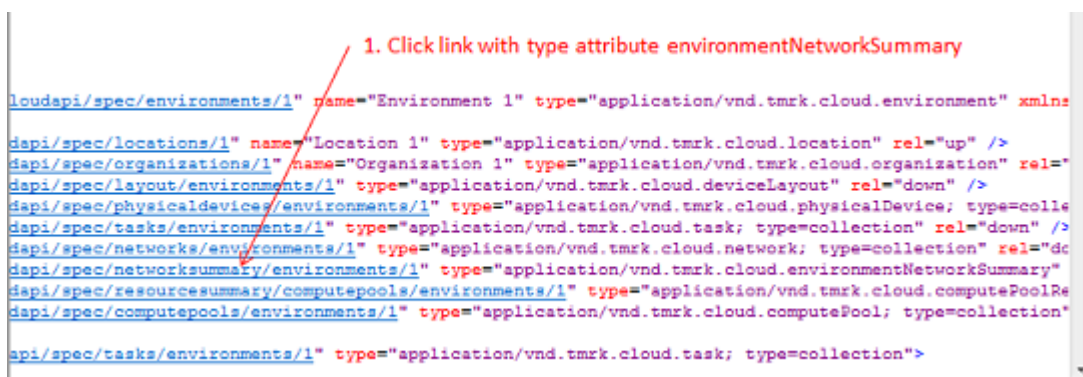
2. The Get Environments call executes.
3. The call details are returned in the History pane.
4. The response is displayed in the History pane.



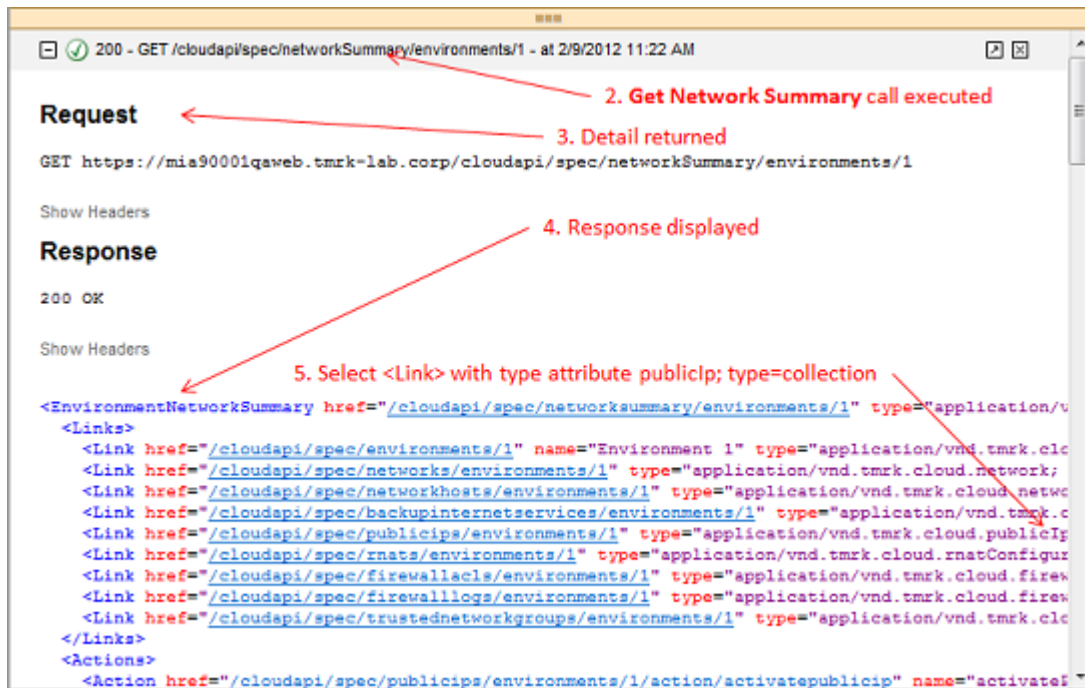
5. Click in the History pane and use the right arrow to scroll to the right.
6. Select the <Link> with a type of environmentNetworkSummary.

### 6.1.3 Step 3: Get Network Summary

To simplify this example, neither a trusted network group nor backup Internet service is desired.



1. Click the href link on <Link> with a type of environmentNetworkSummary.



200 - GET /cloudapi/spec/networkSummary/environments/1 - at 2/9/2012 11:22 AM

**Request**

GET https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/networkSummary/environments/1

Show Headers

**Response**

200 OK

Show Headers

5. Select <Link> with type attribute publicIp; type=collection

```
<EnvironmentNetworkSummary href="/cloudapi/spec/networksummary/environments/1" type="application/vnd.tmrk.cloud.networkSummary+xml">
  <Links>
    <Link href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment+xml"/>
    <Link href="/cloudapi/spec/networks/environments/1" type="application/vnd.tmrk.cloud.network+xml"/>
    <Link href="/cloudapi/spec/networkhosts/environments/1" type="application/vnd.tmrk.cloud.networkhost+xml"/>
    <Link href="/cloudapi/spec/backupinternetservices/environments/1" type="application/vnd.tmrk.cloud.backupinternetService+xml"/>
    <Link href="/cloudapi/spec/publicips/environments/1" type="application/vnd.tmrk.cloud.publicIp+xml"/>
    <Link href="/cloudapi/spec/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration+xml"/>
    <Link href="/cloudapi/spec/firewalllogs/environments/1" type="application/vnd.tmrk.cloud.firewallLog+xml"/>
    <Link href="/cloudapi/spec/trustednetworkgroups/environments/1" type="application/vnd.tmrk.cloud.trustedNetworkGroup+xml"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/publicips/environments/1/action/activatepublicip" name="activatepublicip" type="application/vnd.tmrk.cloud.action+xml"/>
  </Actions>
</EnvironmentNetworkSummary>
```

2. The Get Network Summary call executes.
3. The call details are returned in the History pane.
4. The response is displayed in the History pane.
5. Select the <Link> with a type of publicIp; type=collection.

#### 6.1.4 Step 4: Get Public IPs

To simplify this example, neither a trusted network group nor backup Internet service is desired.



**Response**

200 OK

Show Headers

1. Click link with type attribute publicIp

```
<EnvironmentNetworkSummary href="/cloudapi/spec/networksummary/environments/1" type="application/vnd.tmrk.cloud.networkSummary+xml">
  <Links>
    <Link href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud.environment+xml"/>
    <Link href="/cloudapi/spec/networks/environments/1" type="application/vnd.tmrk.cloud.network+xml"/>
    <Link href="/cloudapi/spec/networkhosts/environments/1" type="application/vnd.tmrk.cloud.networkhost+xml"/>
    <Link href="/cloudapi/spec/backupinternetservices/environments/1" type="application/vnd.tmrk.cloud.backupinternetService+xml"/>
    <Link href="/cloudapi/spec/publicips/environments/1" type="application/vnd.tmrk.cloud.publicIp+xml"/>
    <Link href="/cloudapi/spec/rnats/environments/1" type="application/vnd.tmrk.cloud.rnatConfiguration+xml"/>
    <Link href="/cloudapi/spec/firewalllogs/environments/1" type="application/vnd.tmrk.cloud.firewallLog+xml"/>
    <Link href="/cloudapi/spec/trustednetworkgroups/environments/1" type="application/vnd.tmrk.cloud.trustedNetworkGroup+xml"/>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/publicips/environments/1/action/activatepublicip" name="activatepublicip" type="application/vnd.tmrk.cloud.action+xml"/>
  </Actions>
</EnvironmentNetworkSummary>
```

1. Click the href link on <Link> with a type of publicIp; type=collection.





**Request**

GET https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/PublicIps/environments/1

Show Headers

**Response**

200 OK

Show Headers

```
<PublicIpAddresses href="/cloudapi/spec/publicips/environments/1" type="application/vnd.tmrk.cloud">
  <Links>
    <Link href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud">
    </Link>
  </Links>
  <PublicIp href="/cloudapi/spec/publicips/1" name="72.46.234.8" type="application/vnd.tmrk.cloud">
    <IpType>defaultRnat</IpType>
  </PublicIp>
  <PublicIp href="/cloudapi/spec/publicips/2" name="72.46.234.14" type="application/vnd.tmrk.cloud">
    <IpType>rnat</IpType>
  </PublicIp>
  <PublicIp href="/cloudapi/spec/publicips/3" name="72.46.234.55" type="application/vnd.tmrk.cloud">
    <IpType>none</IpType>
  </PublicIp>
  <Remaining>3</Remaining>
</PublicIpAddresses>
```

2. The Get Public IPs call executes.
3. The call details are returned in the History pane.
4. The response is displayed in the History pane.
5. Select the <PublicIp> with the name of the IP address of the public IP address to be used by the desired Internet service.

### 6.1.5 Step 5: Get Public IPs by ID

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



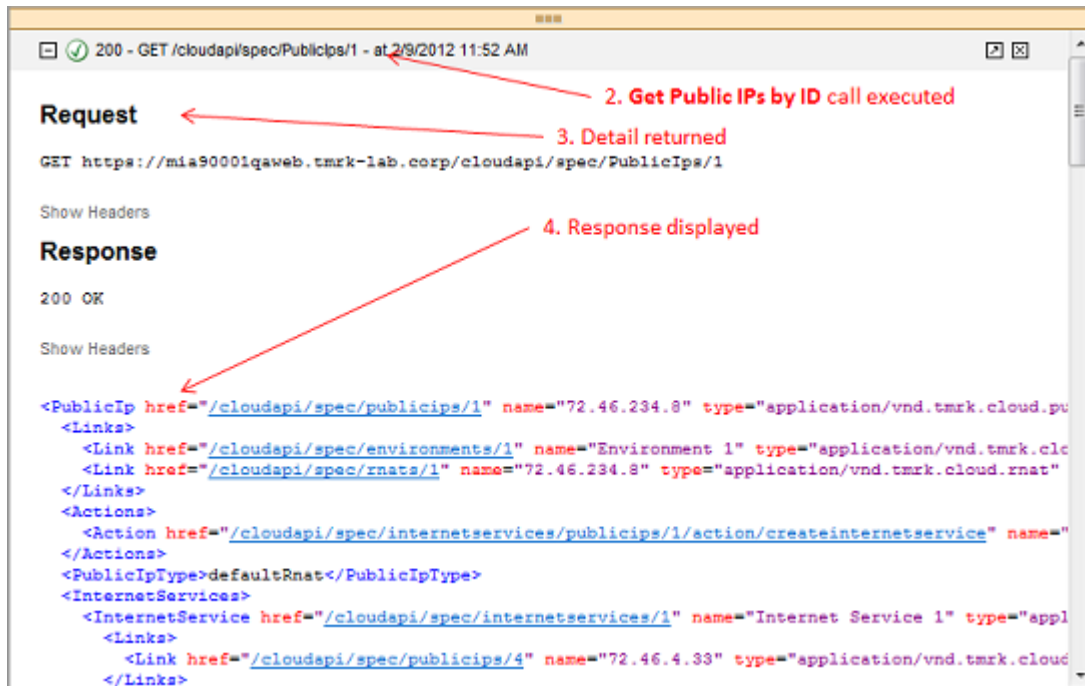
**Response**

200 OK

Show Headers

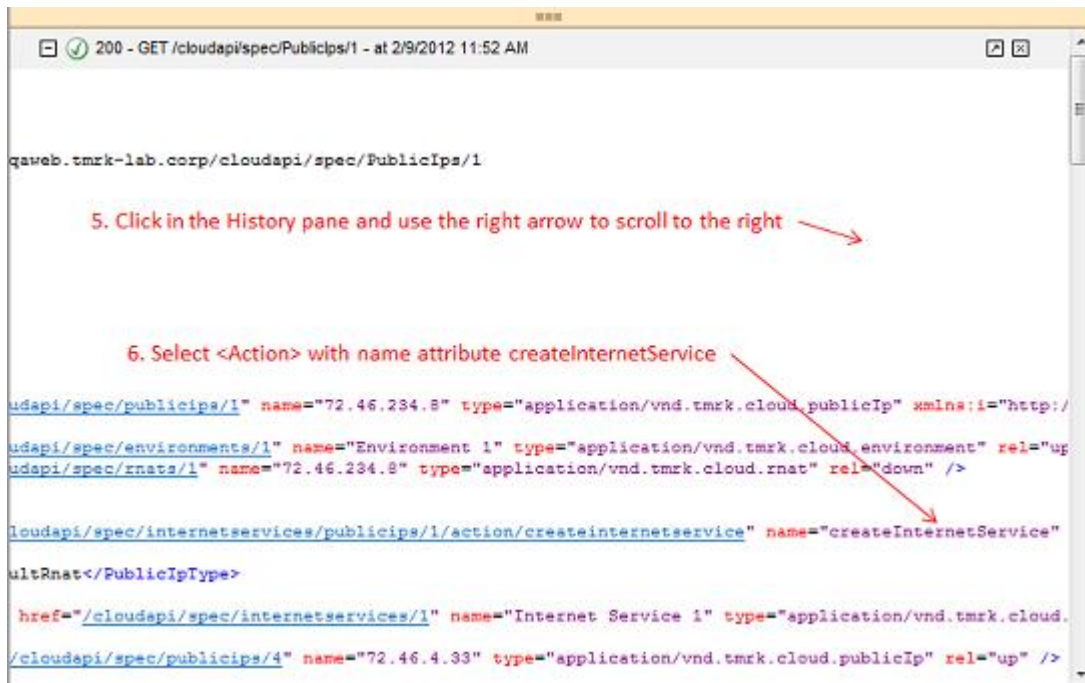
```
<PublicIpAddresses href="/cloudapi/spec/publicips/environments/1" type="application/vnd.tmrk.cloud">
  <Links>
    <Link href="/cloudapi/spec/environments/1" name="Environment 1" type="application/vnd.tmrk.cloud">
    </Link>
  </Links>
  <PublicIp href="/cloudapi/spec/publicips/1" name="72.46.234.8" type="application/vnd.tmrk.cloud">
    <IpType>defaultRnat</IpType>
  </PublicIp>
  <PublicIp href="/cloudapi/spec/publicips/2" name="72.46.234.14" type="application/vnd.tmrk.cloud">
    <IpType>rnat</IpType>
  </PublicIp>
  <PublicIp href="/cloudapi/spec/publicips/3" name="72.46.234.55" type="application/vnd.tmrk.cloud">
    <IpType>none</IpType>
  </PublicIp>
  <Remaining>3</Remaining>
</PublicIpAddresses>
```

1. Click the href link on <PublicIp> with the name of the IP address of the public IP address to be used by the desired Internet service.



2. The Get Public IPs by ID call executes.
3. The call details are returned in the History pane.
4. The response is displayed in the History pane.





5. Click in the History pane and use the right arrow to scroll to the right.
6. Select the <Action> with the name attribute of createInternetService.

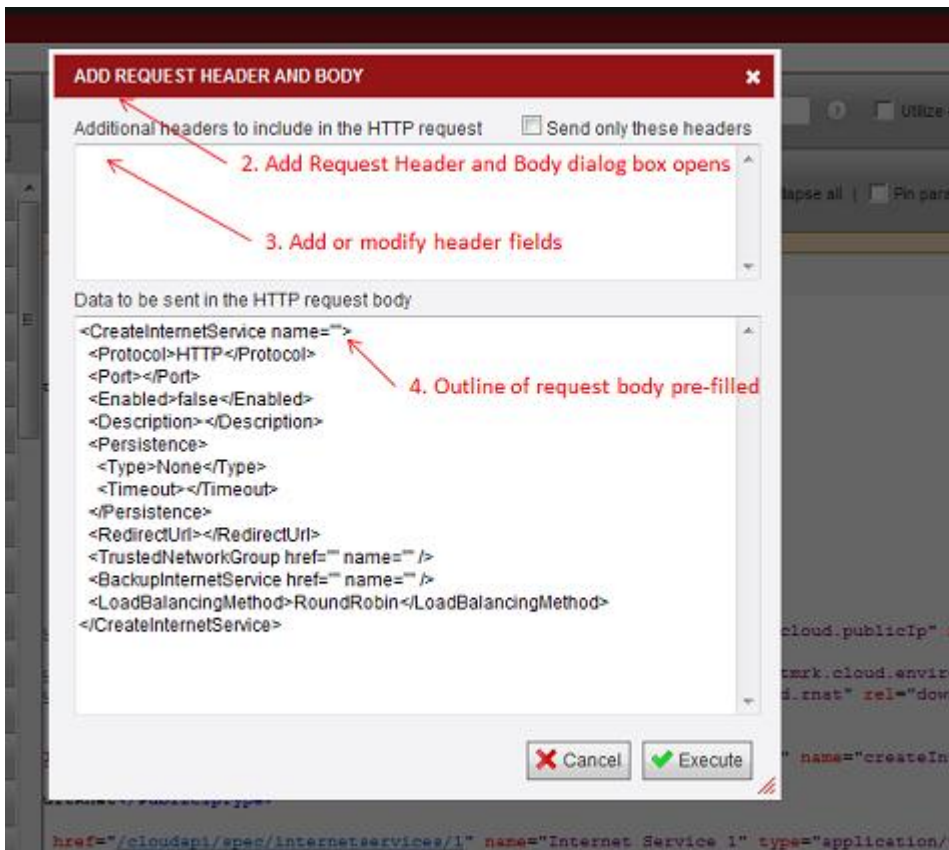
#### 6.1.6 Step 6: Get Trusted Network Groups

To simplify this example, a trusted network group is not desired.

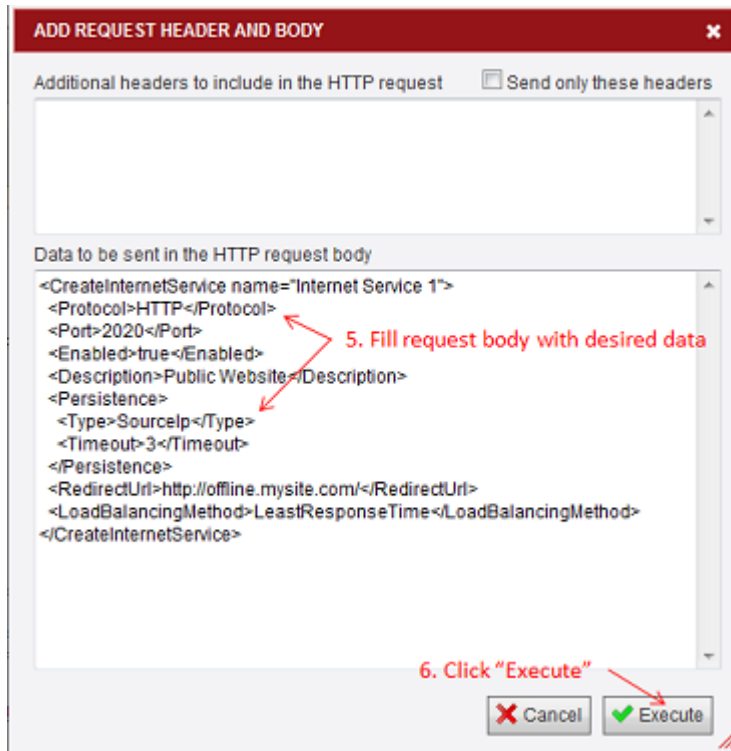
#### 6.1.7 Step 7: Get Backup Internet Services

To simplify this example, a backup Internet service is not desired.





2. The Add Request Header and Body dialog box opens.
3. Add or modify header fields in the "Additional headers to include in the HTTP request" text box.
4. An outline of the request body is pre-filled in the "Data to be sent in the HTTP request body" text box.



**ADD REQUEST HEADER AND BODY**

Additional headers to include in the HTTP request ☐ Send only these headers

Data to be sent in the HTTP request body

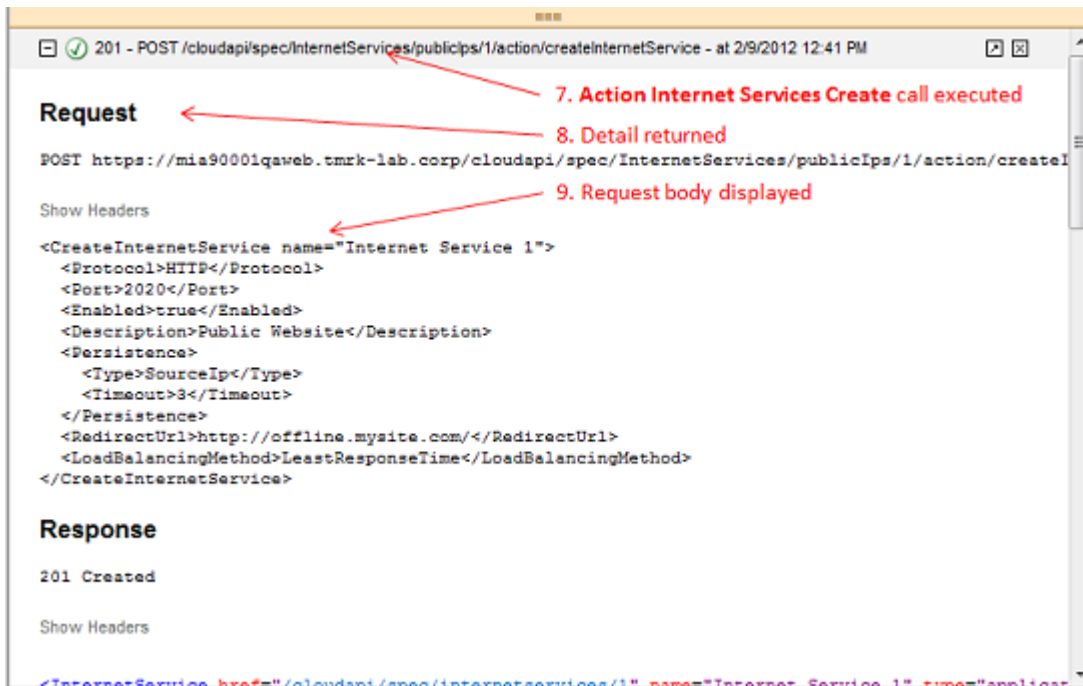
```
<CreateInternetService name="Internet Service 1">
  <Protocol>HTTP</Protocol>
  <Port>2020</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

5. Fill request body with desired data

6. Click "Execute"

Cancel Execute

5. Fill the request body with the desired data in the "Data to be sent in the HTTP request body" text box.
6. Click the "Execute" button.



201 - POST /cloudapi/spec/InternetServices/publicIps/1/action/createInternetService - at 2/9/2012 12:41 PM

**Request**

7. Action Internet Services Create call executed

8. Detail returned

9. Request body displayed

POST https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/InternetServices/publicIps/1/action/createInternetService

Show Headers

```
<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>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

**Response**

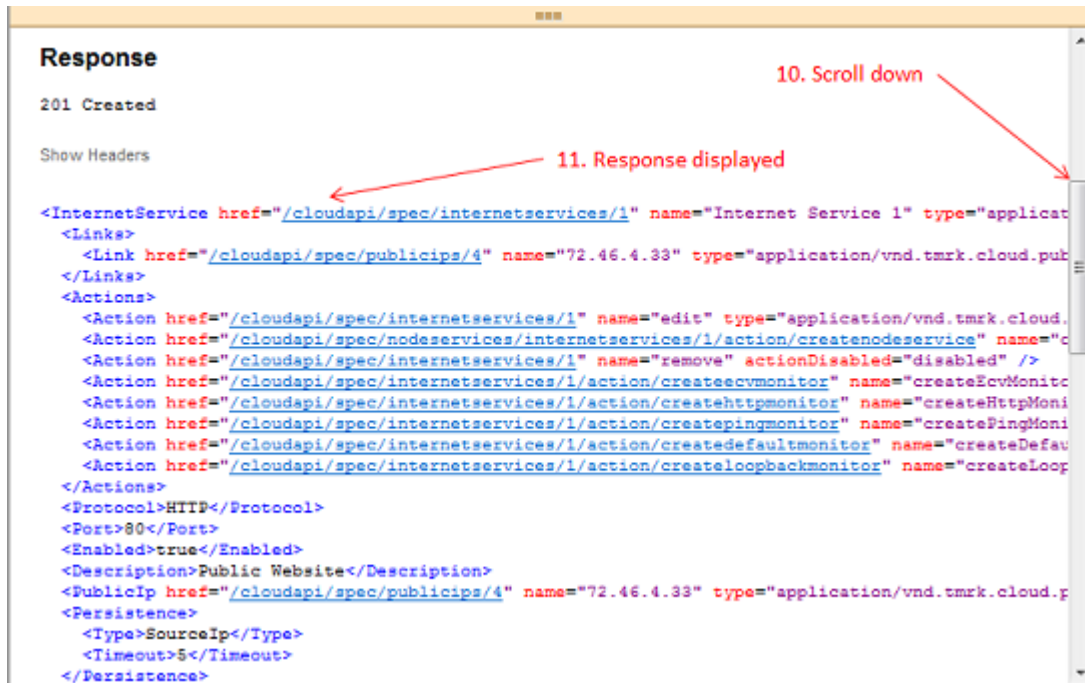
201 Created

Show Headers

```
<InternetService href="/cloudapi/spec/internetservices/1" name="Internet Service 1" type="application"
```

7. The Action Internet Services Create call executes.

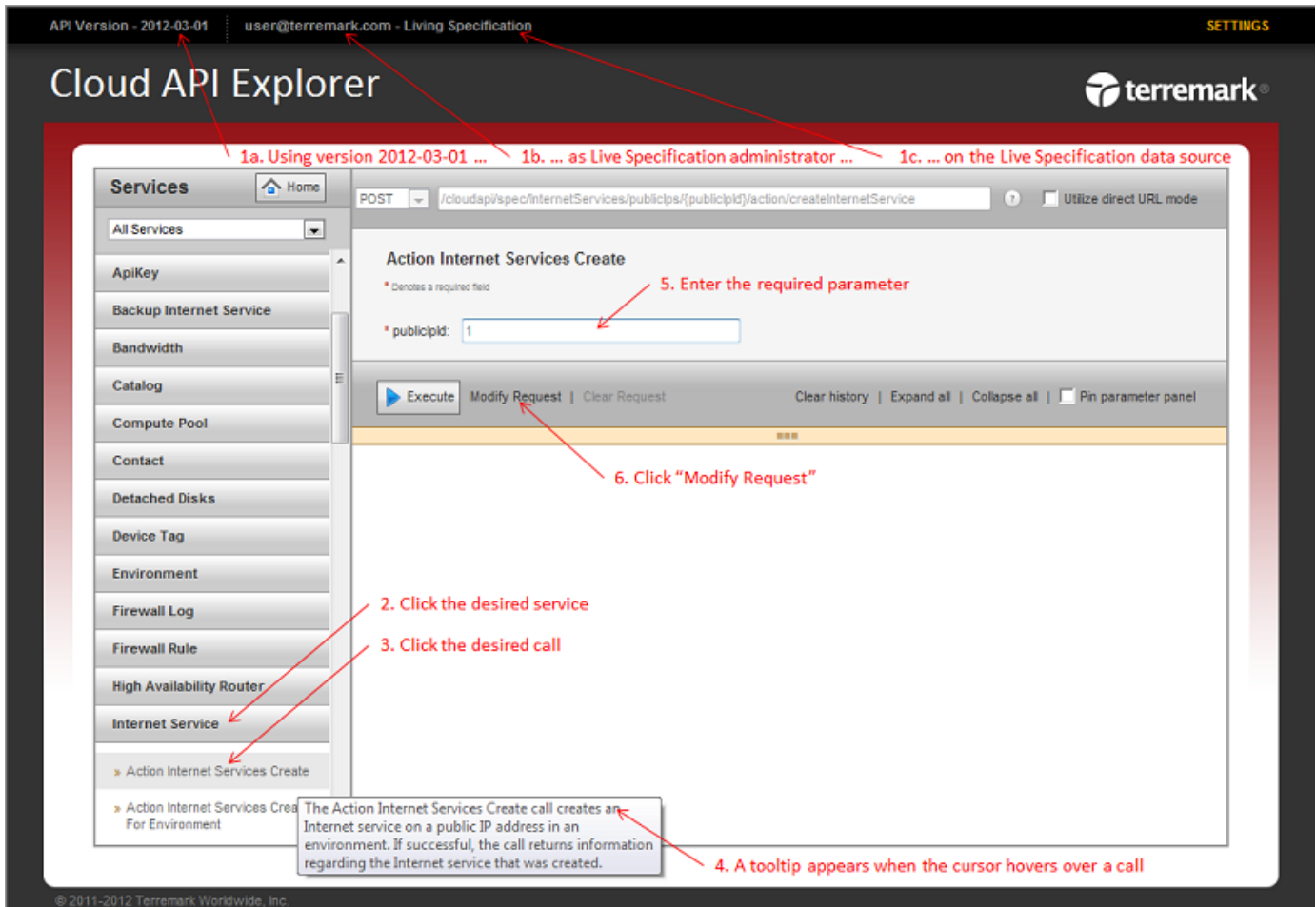
8. Call detail is returned and displayed in the History pane.
9. The request body is displayed for calls with a request body.



10. Scroll down to see more of the response.
11. The response is displayed: the newly created Internet Service.

## 6.2 Assisted Mode

In assisted mode, the user selects the call from the Services pane and takes advantage of the prompts built into the Request pane.



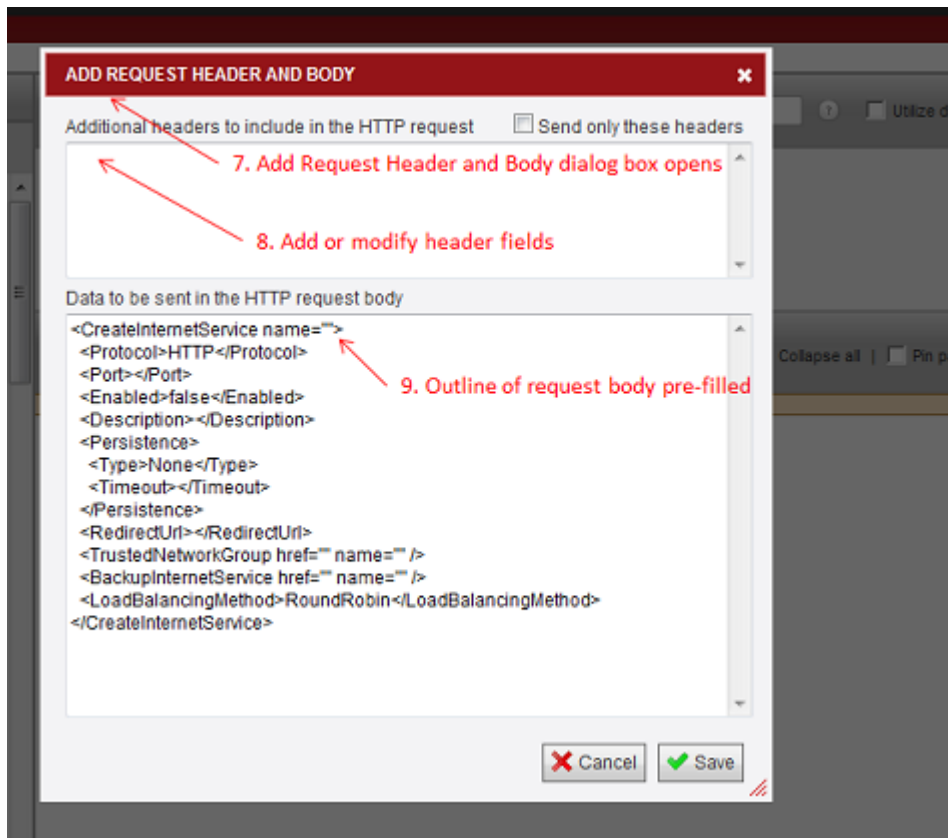
The screenshot shows the Cloud API Explorer interface. At the top, the API version is 2012-03-01 and the user is user@terremark.com. The interface includes a sidebar with a list of services, a main panel for the selected service (Internet Service), and a bottom panel for the selected call (Action Internet Services Create). Red arrows and numbers indicate the following steps:

1. Using version 2012-03-01 ...
2. Click the desired service
3. Click the desired call
4. A tooltip appears when the cursor hovers over a call
5. Enter the required parameter
6. Click "Modify Request"

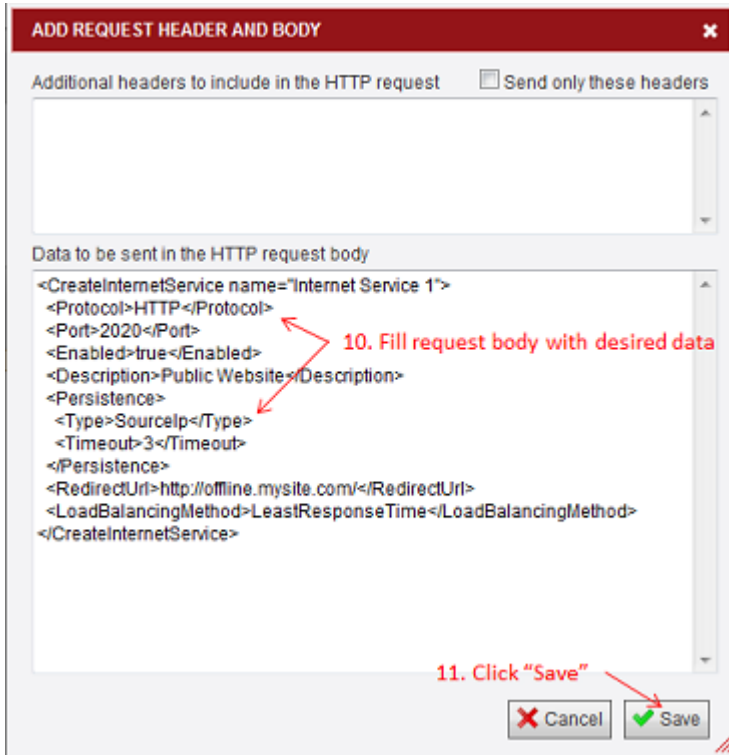
1. Using version 2012-03-01 as the Live Specification administrator on the Live Specification data source.
2. Click the desired service; Internet Service in this example.
3. Click the desired call; Action Internet Services Create in this example.
4. A tooltip appears when the cursor hovers over a call.
5. Enter the required parameters; "1" for the publicIp identifier in this example.

**Note:** In Assisted Mode, the Cloud API Explorer is unable to provide parameters. The user must know a valid parameter for the environment in which the session is operating. However, clicking a link in a response (using browse mode) will again pre-fill the parameters.

6. Click the "Modify Request" button.



7. The Add Request Header and Body dialog box opens.
8. Add or modify header fields in the "Additional headers to include in the HTTP request" text box.
9. An outline of the request body is pre-filled in the "Data to be sent in the HTTP request body" text box.



**ADD REQUEST HEADER AND BODY**

Additional headers to include in the HTTP request ☐ Send only these headers

Data to be sent in the HTTP request body

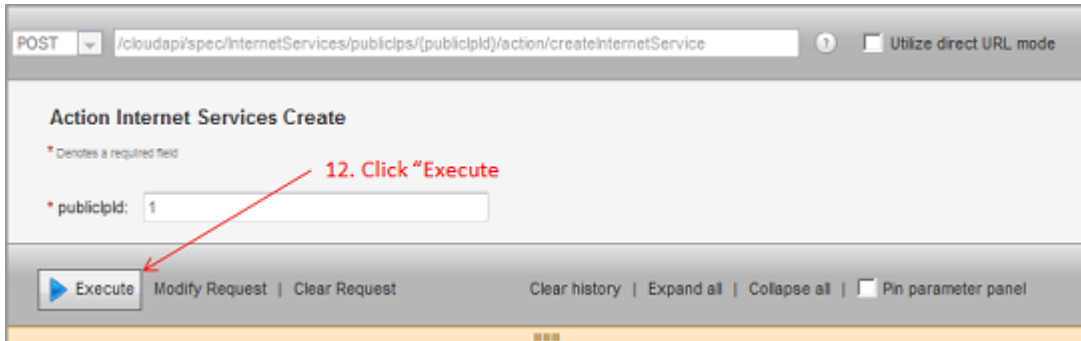
```
<CreateInternetService name="Internet Service 1">
  <Protocol>HTTP</Protocol>
  <Port>2020</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

10. Fill request body with desired data

11. Click "Save"

Cancel Save

10. Fill the request body with the desired data in the "Data to be sent in the HTTP request body" text box.
11. Click the "Save" button.



POST /cloudapi/spec/InternetServices/publicIps/{publicId}/action/createInternetService ? Utilize direct URL mode

**Action Internet Services Create**

\* Denotes a required field

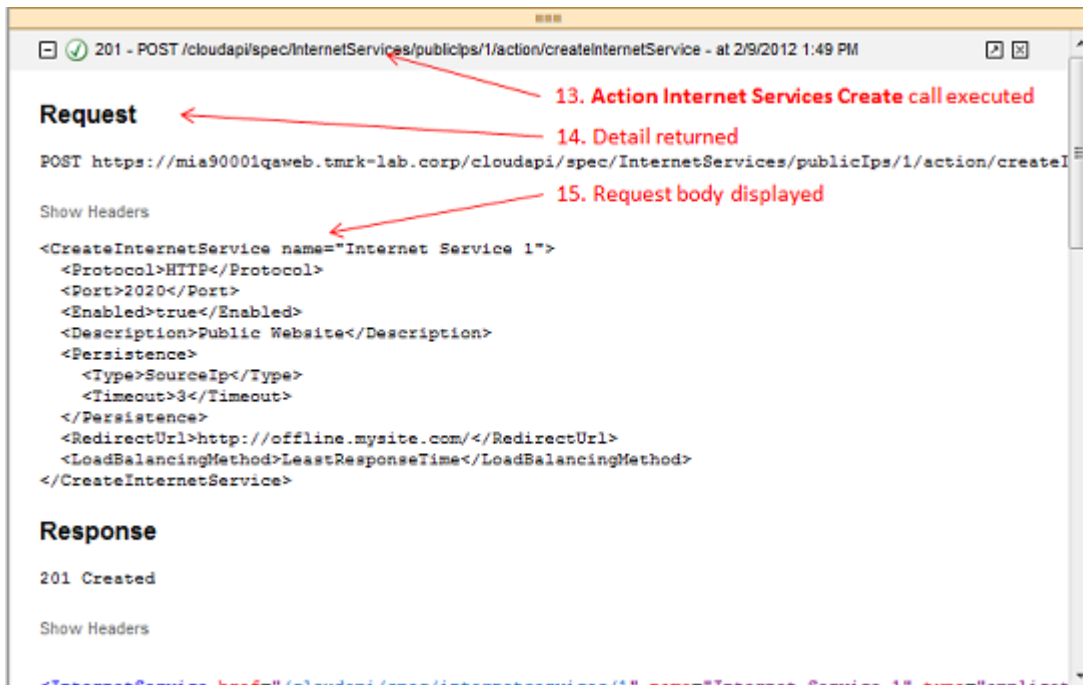
\* publicId: 1

12. Click "Execute"

Execute Modify Request Clear Request Clear history Expand all Collapse all Pin parameter panel

12. Click the "Execute" button.





201 - POST /cloudapi/spec/InternetServices/publicips/1/action/createInternetService - at 2/9/2012 1:49 PM

**Request**

13. Action Internet Services Create call executed

14. Detail returned

15. Request body displayed

POST https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/InternetServices/publicips/1/action/createInternetService

Show Headers

```
<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>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

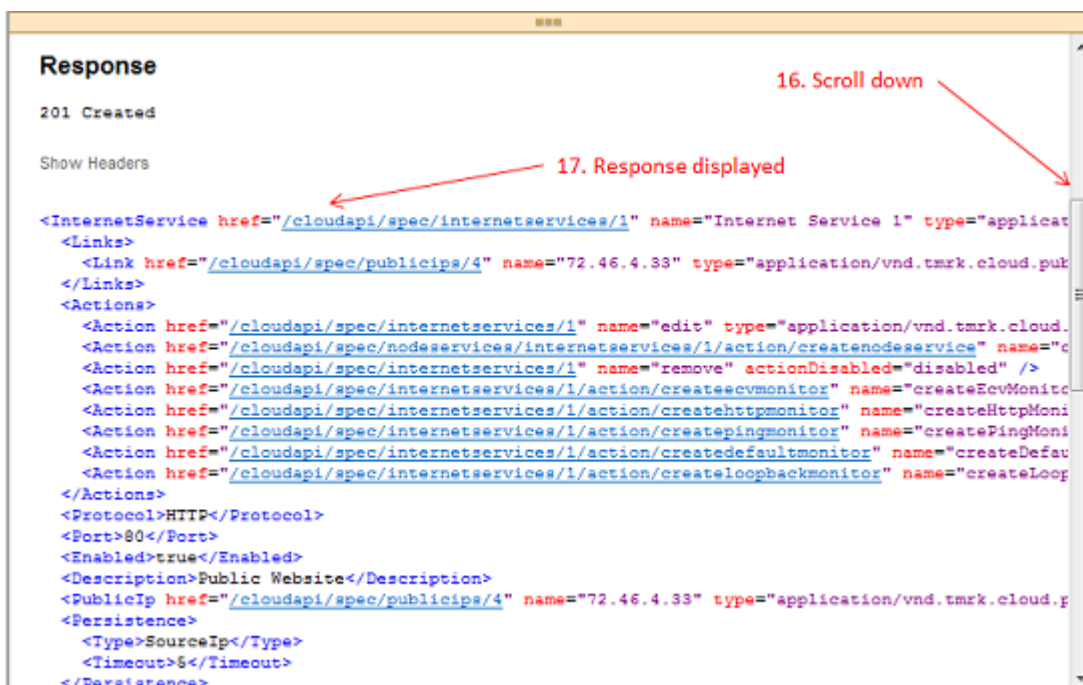
**Response**

201 Created

Show Headers

```
<InternetService href="/cloudapi/spec/internetservices/1" name="Internet Service 1" type="application/vnd.tmrk.cloud.puk">
  <Links>
    <Link href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.puk">
    </Link>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/internetservices/1" name="edit" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/nodeservices/internetservices/1/action/createnodeservice" name="createNodeService" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1" name="remove" actionDisabled="disabled" />
    <Action href="/cloudapi/spec/internetservices/1/action/createecvmonitor" name="createEcvMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createhttpmonitor" name="createHttpMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createpingmonitor" name="createPingMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createdefaultmonitor" name="createDefaultMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createloopbackmonitor" name="createLoopBackMonitor" type="application/vnd.tmrk.cloud.puk">
    </Actions>
  <Protocol>HTTP</Protocol>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <PublicIp href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.puk">
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>5</Timeout>
  </Persistence>
</InternetService>
```

13. The Action Internet Services Create call executes.
14. Call detail is returned and displayed in the History pane.
15. The request body is displayed for calls with a request body.



**Response**

201 Created

Show Headers

16. Scroll down

17. Response displayed

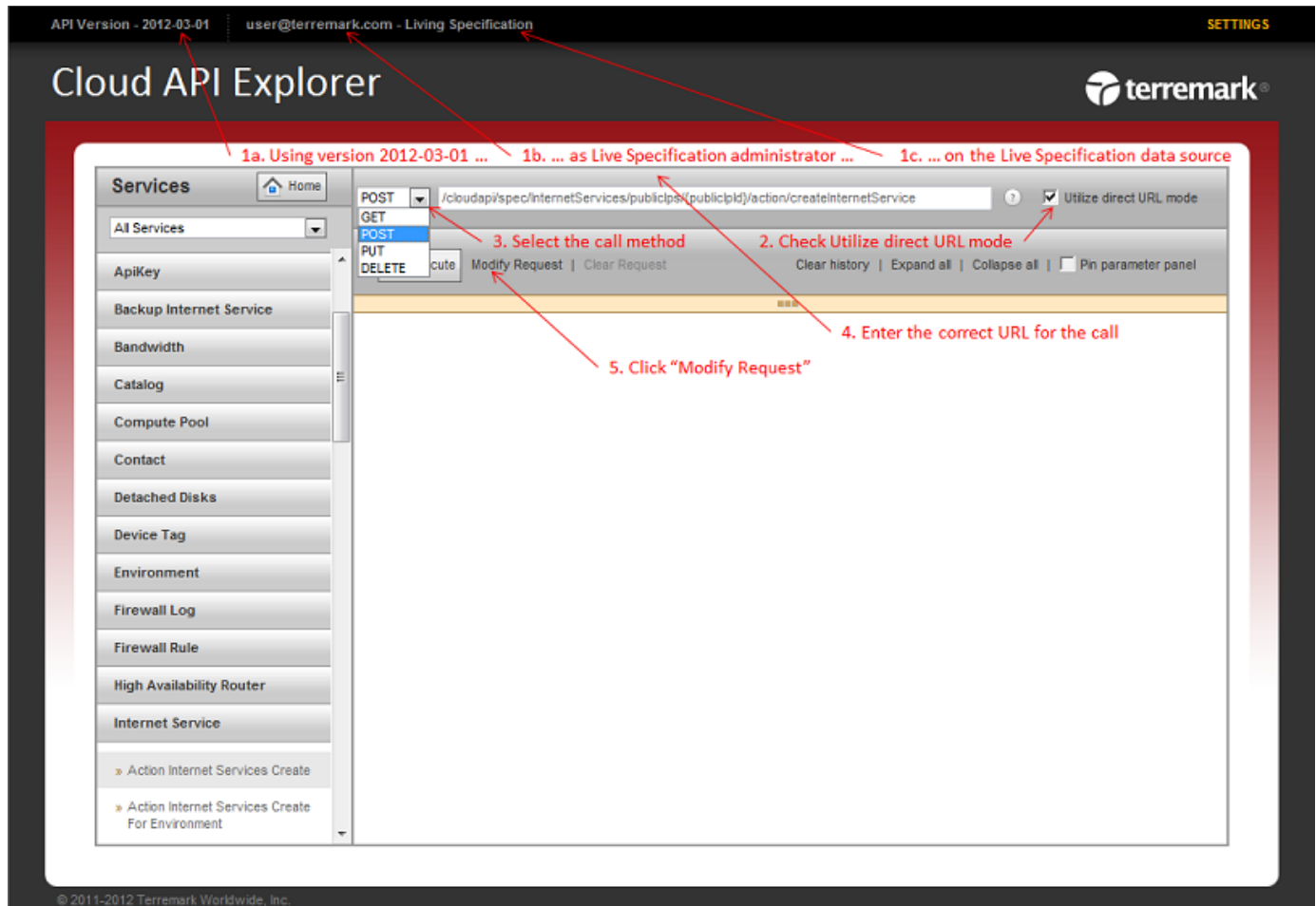
```
<InternetService href="/cloudapi/spec/internetservices/1" name="Internet Service 1" type="application/vnd.tmrk.cloud.puk">
  <Links>
    <Link href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.puk">
    </Link>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/internetservices/1" name="edit" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/nodeservices/internetservices/1/action/createnodeservice" name="createNodeService" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1" name="remove" actionDisabled="disabled" />
    <Action href="/cloudapi/spec/internetservices/1/action/createecvmonitor" name="createEcvMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createhttpmonitor" name="createHttpMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createpingmonitor" name="createPingMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createdefaultmonitor" name="createDefaultMonitor" type="application/vnd.tmrk.cloud.puk">
    <Action href="/cloudapi/spec/internetservices/1/action/createloopbackmonitor" name="createLoopBackMonitor" type="application/vnd.tmrk.cloud.puk">
    </Actions>
  <Protocol>HTTP</Protocol>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <PublicIp href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.puk">
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>5</Timeout>
  </Persistence>
</InternetService>
```

16. Scroll down to see more of the response.

17. The response is displayed: the newly created Internet Service.

### 6.3 Direct URL Mode

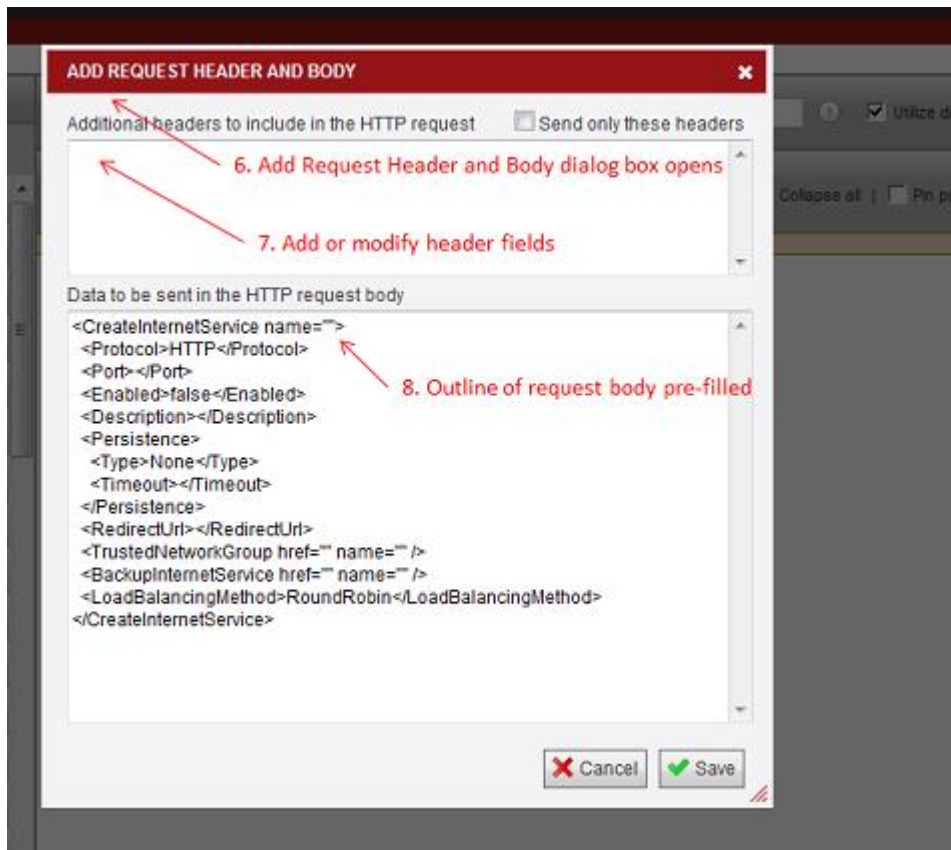
In direct URL mode, the user selects the call method and enters the URL directly in the location text box.



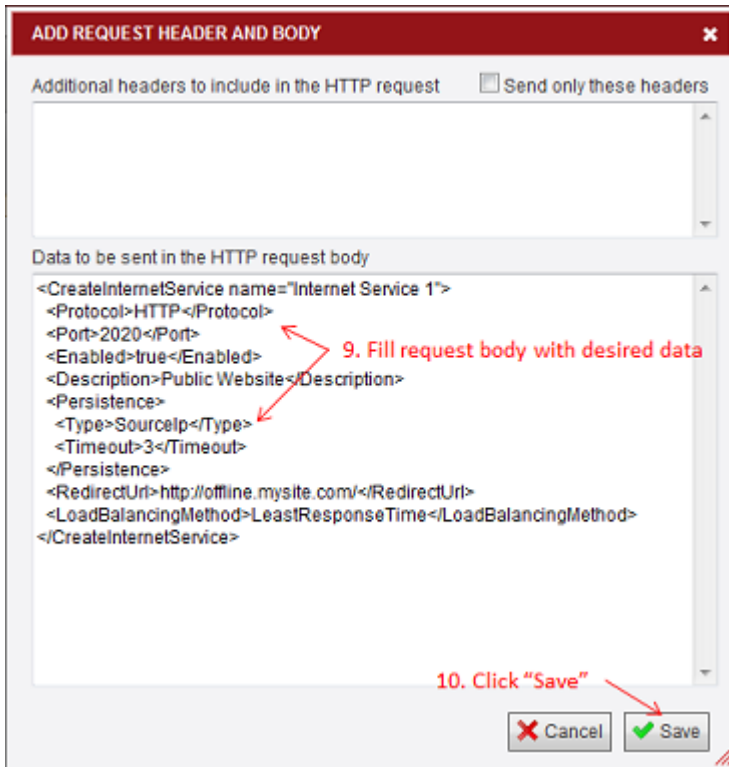
1. Using version 2012-03-01 as the Live Specification administrator on the Live Specification data source.
2. Check the "Utilize direct URL mode" checkbox to enable direct URL mode.
3. Select the desired call method; POST in this example.
4. Enter the correct URL for the call; /cloudapi/spec/InternetServices/publicIps/1/ ... action/createInternetService in this example.

**Note:** If the URL requires one or more identifiers, it is up to the user to locate and enter appropriate values.

5. Click the "Modify Request" button.



6. The Add Request Header and Body dialog box opens.
7. Add or modify header fields in the "Additional headers to include in the HTTP request" text box.
8. An outline of the request body is pre-filled in the "Data to be sent in the HTTP request body" text box.



**ADD REQUEST HEADER AND BODY**

Additional headers to include in the HTTP request ☐ Send only these headers

Data to be sent in the HTTP request body

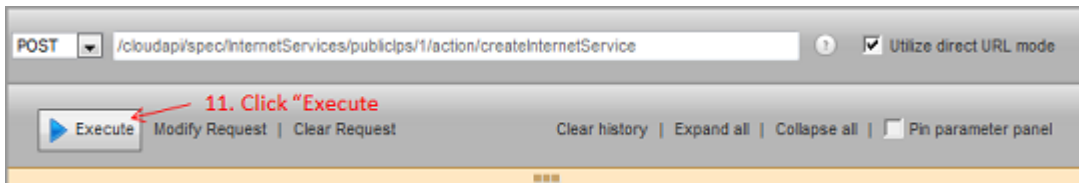
```
<CreateInternetService name="Internet Service 1">
  <Protocol>HTTP</Protocol>
  <Port>2020</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
  <RedirectUrl>http://offline.mysite.com/</RedirectUrl>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

9. Fill request body with desired data

10. Click "Save"

Cancel Save

9. Fill the request body with the desired data in the "Data to be sent in the HTTP request body" text box.
10. Click the "Save" button.

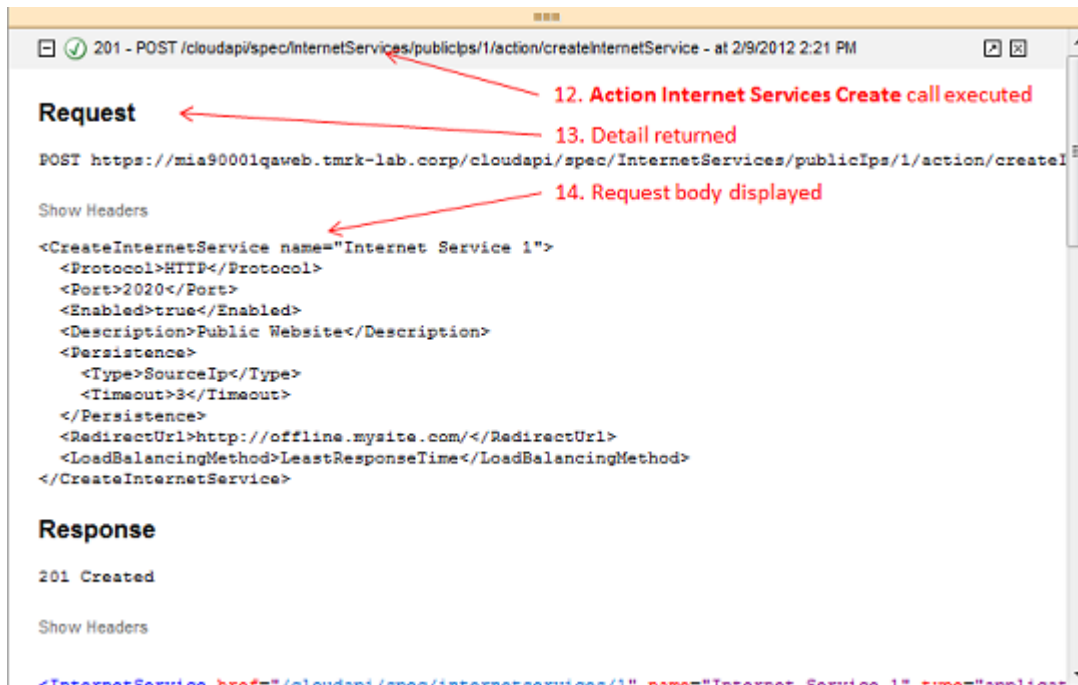


POST /cloudapi/spec/InternetServices/publicips/1/action/createInternetService Utilize direct URL mode

Execute Modify Request Clear Request Clear history Expand all Collapse all Pin parameter panel

11. Click "Execute"

11. Click the "Execute" button.



201 - POST /cloudapi/spec/InternetServices/publicips/1/action/createInternetService - at 2/9/2012 2:21 PM

**Request**

POST https://mia90001qaweb.tmrk-lab.corp/cloudapi/spec/InternetServices/publicips/1/action/createInternetService

Show Headers

```
<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>
  <LoadBalancingMethod>LeastResponseTime</LoadBalancingMethod>
</CreateInternetService>
```

**Response**

201 Created

Show Headers

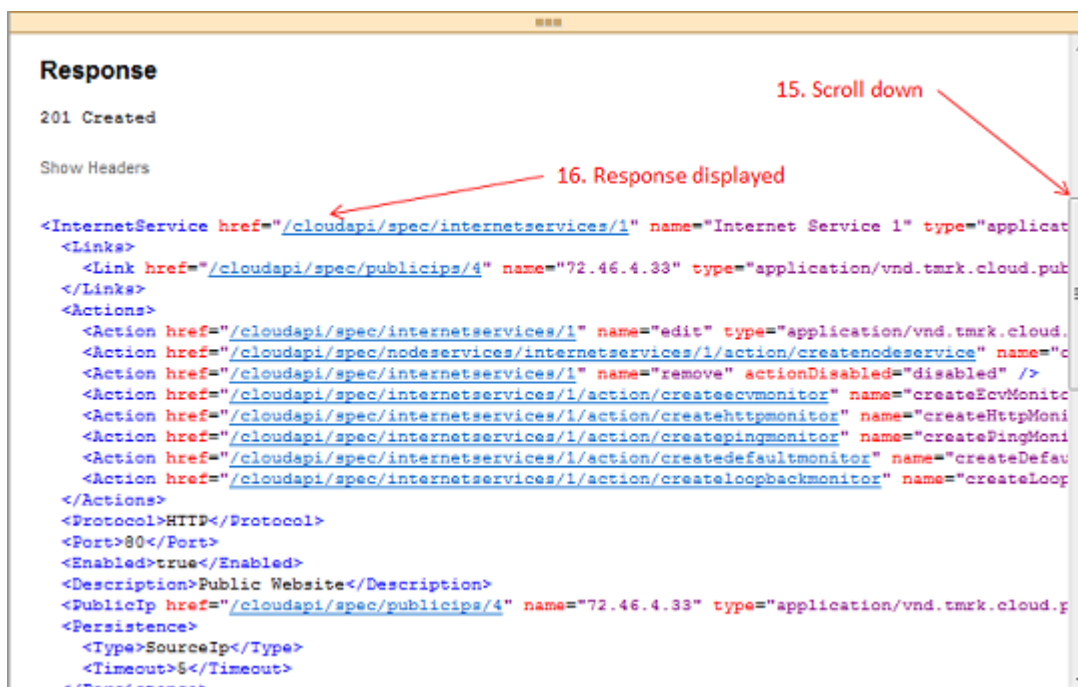
```
<InternetService href="/cloudapi/spec/internetservices/1" name="Internet Service 1" type="application/vnd.tmrk.cloud.pub">
```

12. Action Internet Services Create call executed

13. Detail returned

14. Request body displayed

12. The Action Internet Services Create call executes.
13. Call detail is returned and displayed in the History pane.
14. The request body is displayed for calls with a request body.



**Response**

201 Created

Show Headers

```
<InternetService href="/cloudapi/spec/internetservices/1" name="Internet Service 1" type="application/vnd.tmrk.cloud.pub">
  <Links>
    <Link href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.pub">
    </Link>
  </Links>
  <Actions>
    <Action href="/cloudapi/spec/internetservices/1" name="edit" type="application/vnd.tmrk.cloud.pub">
    <Action href="/cloudapi/spec/nodeservices/internetservices/1/action/createnodeservice" name="createNodeService">
    <Action href="/cloudapi/spec/internetservices/1" name="remove" actionDisabled="disabled" />
    <Action href="/cloudapi/spec/internetservices/1/action/createecvmonitor" name="createEcvMonitor">
    <Action href="/cloudapi/spec/internetservices/1/action/createhttpmonitor" name="createHttpMonitor">
    <Action href="/cloudapi/spec/internetservices/1/action/createpingmonitor" name="createPingMonitor">
    <Action href="/cloudapi/spec/internetservices/1/action/createdefaultmonitor" name="createDefaultMonitor">
    <Action href="/cloudapi/spec/internetservices/1/action/createloopbackmonitor" name="createLoopbackMonitor">
    </Actions>
  <Protocol>HTTP</Protocol>
  <Port>80</Port>
  <Enabled>true</Enabled>
  <Description>Public Website</Description>
  <PublicIp href="/cloudapi/spec/publicips/4" name="72.46.4.33" type="application/vnd.tmrk.cloud.pub">
  <Persistence>
    <Type>SourceIp</Type>
    <Timeout>3</Timeout>
  </Persistence>
</InternetService>
```

15. Scroll down

16. Response displayed

15. Scroll down to see more of the response.

16. The response is displayed: the newly created Internet Service.