

OCCI Infrastructure Extension

SPIRALS

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1 OCCI infrastructure extension

Name	infrastructure
Scheme	http://schemas.ogf.org/occi/infrastructure#
Specification	https://www.ogf.org/documents/GFD.224.pdf

1.1 Description

OCCI Infrastructure Model

1.2 Imported OCCI extensions

Name	core
Scheme	http://schemas.ogf.org/occi/core#

1.3 Specification

The specification of OCCI Infrastructure extension is available here: <https://www.ogf.org/documents/GFD.224.pdf>.

1.4 Types

1.4.1 SuspendMethod type

Literals

- **hibernate**
- **suspend**

1.4.2 Vlan type

- **Basic type:** Integer
- **minInclusive:** 0
- **maxInclusive:** 4095

1.4.3 Token type

- **Basic type:** String

1.4.4 NetworkStatus type

Literals

- **active**
- **inactive**
- **error**

1.4.5 ComputeStatus type

Literals

- **active**
- **inactive**
- **suspended**
- **error**

1.4.6 NetworkInterfaceStatus type

Literals

- active
- inactive
- error

1.4.7 Architecture type

Literals

- x86
- x64

1.4.8 StopMethod type

Literals

- graceful
- acpioff
- poweroff

1.4.9 RestartMethod type

Literals

- graceful
- warm
- cold

1.4.10 IpAddress type

- Basic type: String

1.4.11 Allocation type

Literals

- dynamic
- static

1.4.12 StorageStatus type

Literals

- online
- offline
- error

1.4.13 StorageLinkStatus type

Literals

- active
- inactive
- error

1.4.14 Core type

- **Basic type:** Integer
- **minExclusive:** 0

1.4.15 GHz type

- **Basic type:** Float
- **minExclusive:** 0

1.4.16 GiB type

- **Basic type:** Float
- **minExclusive:** 0

1.4.17 IpAddressRange type

- **Basic type:** String

1.4.18 Mac type

- **Basic type:** String

1.4.19 Share type

- **Basic type:** Integer
- **minInclusive:** 0

1.4.20 SaveMethod type

Literals

- hot : hot documentation
- deferred

1.5 Kinds

1.5.1 Network kind

Name	Network
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Network Resource
Parent	Resource (http://schemas.ogf.org/occi/core#)

- **Network attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.network.vlan	Vlan	false	true		802.1q VLAN Identifier (e.g., 343)
occi.network.label	Token	false	true		Tag based VLANs (e.g., external-dmz)
occi.network.state	NetworkStatus	true	false	inactive	Current state of the instance
occi.network.state.message	String	false	false		Human-readable explanation of the current instance state

- **Network actions**

- **Scheme:** <http://schemas.ogf.org/occi/infrastructure/network/action#>

Term	Attributes	Title
up		Up a network.
down		Down a network.

- **Network Behavior**

- **Attribute:** `occi.network.state`
- **Initial state:** inactive
- **Final states:** inactive
- **Transitions:**

Source State	Target State	Action
inactive	active	Up
inactive	error	Up
active	inactive	Down
active	error	Down

1.5.2 Compute kind

Name	Compute
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Compute Resource
Parent	Resource (http://schemas.ogf.org/occi/core#)

- **Compute attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.compute.architecture	Architecture	false	true		CPU Architecture of the instance
occi.compute.cores	Core	false	true		Number of CPU cores assigned to the instance
occi.compute.hostname	String	false	true		Fully Qualified DNS host-name for the instance
occi.compute.share	Share	false	true		Relative number of CPU shares for the instance
occi.compute.speed	GHz	false	true		CPU Clock frequency (speed) in gigahertz
occi.compute.memory	GiB	false	true		Maximum RAM in gigabytes allocated to the instance
occi.compute.state	ComputeStatus	true	false	inactive	Current state of the instance
occi.compute.state.message	String	false	false		Human-readable explanation of the current instance state

- **Compute actions**

- **Scheme:** <http://schemas.ogf.org/occi/infrastructure/compute/action#>

Term	Attributes	Title
start		Start the system
stop	method StopMethod	Stop the system (graceful, acpioff or poweroff)
restart	method RestartMethod	Restart the system (graceful, warm or cold)
suspend	method SuspendMethod	Suspend the system (hibernate or in RAM)
save	method SaveMethod , name String	Save the system (hot, deferred)

- **Compute Behavior**

- **Attribute:** `occi.compute.state`
- **Initial state:** inactive
- **Final states:** inactive
- **Transitions:**

Source State	Target State	Action
inactive	active	Start
inactive	error	Start
active	inactive	Stop
active	suspended	Suspend
active	error	Stop
active	error	Suspend
suspended	error	Start
suspended	active	Start

1.5.3 Storage kind

Name	Storage
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Storage Resource
Parent	Resource (http://schemas.ogf.org/occi/core#)

- **Storage attributes**

Attribute	Type	Required	Mutable	Default	Description
<code>occi.storage.size</code>	GiB	true	true		Storage size of the instance in gigabytes
<code>occi.storage.state</code>	StorageStatus	true	false		Current status of the instance
<code>occi.storage.state.message</code>	String	false	false		Human-readable explanation of the current instance state

- **Storage actions**

- **Scheme:** <http://schemas.ogf.org/occi/infrastructure/storage/action#>

Term	Attributes	Title
online		Set storage online
offline		Set storage offline

- **Storage Behavior**

- **Attribute:** `occi.storage.state`
- **Initial state:** offline
- **Final states:** offline

- **Transitions:**

Source State	Target State	Action
offline	online	Online
offline	error	Online
online	offline	Offline
online	error	Offline

1.5.4 StorageLink kind

Name	StorageLink
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	StorageLink Link
Parent	Link (http://schemas.ogf.org/occi/core#)

- **StorageLink attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.storagelink.deviceid	String	true	true		Device identifier as defined by the OCCI service provider
occi.storagelink.mountpoint	String	false	true		Point to where the storage is mounted in the guest OS
occi.storagelink.state	StorageLinkStatus	true	false		Current status of the instance
occi.storagelink.state.message	String	false	false		Human-readable explanation of the current instance state

- **StorageLink Behavior**

- **Attribute:** `occi.storagelink.state`
- **Initial state:** inactive
- **Final states:** inactive
- **Transitions:**

Source State	Target State	Action
inactive	active	
inactive	error	
active	inactive	
active	error	

1.5.5 NetworkInterface kind

Name	NetworkInterface
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	NetworkInterface Link
Parent	Link (http://schemas.ogf.org/occi/core#)

- **NetworkInterface attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.networkinterface.interface	String	true	false		Identifier that relates the link to the link's device interface
occi.networkinterface.mac	Mac	true	true		MAC address associated with the link's device interface
occi.networkinterface.state	NetworkInterfaceStatus	true	false		Current status of the instance
occi.networkinterface.state.message	String	false	false		Human-readable explanation of the current instance state

- **NetworkInterface Behavior**

- **Attribute:** `occi.networkinterface.state`
- **Initial state:** inactive
- **Final states:** inactive
- **Transitions:**

Source State	Target State	Action
inactive	active	
inactive	error	
active	inactive	
active	error	

1.6 Mixins

1.6.1 IpNetwork mixin

Name	IpNetwork
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	An IP Networking Mixin

- **Applies to:**
 - Network (<http://schemas.ogf.org/occi/infrastructure#>)
- **IpNetwork attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.network.address	IpAddressRange	false	true		Internet Protocol (IP) network address (e.g., 192.168.0.1/24, fc00::/7)
occi.network.gateway	IpAddress	false	true		Internet Protocol (IP) network address (e.g., 192.168.0.1, fc00::)
occi.network.allocation	Allocation	false	true		Address allocation mechanism: dynamic e.g., uses the dynamic host configuration protocol, static e.g., uses user supplied static network configurations

1.6.2 IpNetworkInterface mixin

Name	IpNetworkInterface
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	IP NetworkInterface Mixin

- **Applies to:**

- NetworkInterface (<http://schemas.ogf.org/occi/infrastructure#>)

- **IpNetworkInterface attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.networkinterface.address	IpAddress	true	true		Internet Protocol (IP) network address (e.g., 192.168.0.1/24, fc00::/7) of the link
occi.networkinterface.gateway	IpAddress	false	true		Internet Protocol (IP) network address (e.g., 192.168.0.1/24, fc00::/7)
occi.networkinterface.allocation	Allocation	true	true		Address mechanism: dynamic e.g., uses the dynamic host configuration protocol, static e.g., uses user supplied static network configurations

1.6.3 Os_Tpl mixin

Name	Os_Tpl
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	OS Template

- **Applies to:**

- Compute (<http://schemas.ogf.org/occi/infrastructure#>)

1.6.4 Resource_Tpl mixin

Name	Resource_Tpl
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Resource template

- **Applies to:**

- Resource (<http://schemas.ogf.org/occi/core#>)

1.6.5 SSH_key mixin

Name	SSH_key
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Credentials Mixin

- **Applies to:**

- Compute (<http://schemas.ogf.org/occi/infrastructure#>)

- **SSH_key attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.credentials.ssh.publickey	String	true	true		The contents of the public key file to be injected into the Compute Resource

1.6.6 User_Data mixin

Name	User_Data
Scheme	http://schemas.ogf.org/occi/infrastructure#
Title	Contextualization Mixin

- **Applies to:**

- Compute (<http://schemas.ogf.org/occi/infrastructure#>)

- **User_Data attributes**

Attribute	Type	Required	Mutable	Default	Description
occi.compute.userdata	String	true	false		Contextualization data (e.g., script, executable) that the client supplies once and only once. It cannot be updated