OCCI Infrastructure

OCCI Infrastructure defines three kinds and various extensions relating to management of cloud infrastructure services (IaaS).

1. Example

```
> GET /us-east/webapp/vm01 HTTP/1.1
> User-Agent: occi-client/1.0 (linux) libcurl/7.19.4 OCCI/1.0
> Host: cloud.example.com
> Accept: */*
>
< HTTP/1.1 200 OK
< Date: Sat, 10 Oct 2009 12:56:51 GMT
< Content-Type: application/ovf
< Link: </us-east/webapp/vm01;start>;
<       rel="http://purl.org/occi/action#start";
<       title="Start"
< Link: </networks/dmz>;
<       rel="http://purl.org/occi/kind#network";
<       title="DMZ";
<       address="192.168.0.1/24";
<       interface="eth0"
< Link: </storage/disk1>;
<       rel="http://purl.org/occi/kind#storage";
<       title="Quorum Disk";
<       device="sda"
< Link: </us-east/webapp/build.pdf>;
<       rel="related";
<       title="Documentation";
<       type="application/pdf"
< Category: compute;
<       label="Compute Resource";
<       scheme="http://purl.org/occi/kind#"
< Server: occi-server/1.0 (linux) OCCI/1.0
< Connection: close
<
< <?xml version="1.0" encoding="UTF-8"?>
...
```

2. Kinds

1. Cloud infrastructure can be modeled using three primary kinds: `compute`, `network` and `storage`.

Table 1. Kinds

Kind	URI	Description
`compute`	`http://purl.org/occi/kind#compute`	Information processing resources
`network`	`http://purl.org/occi/kind#network`	Interconnection resources

Kind	URI	Description
`storage`	`http://purl.org/occi/kind#storage`	Recorded information resources

2.1. Compute

2. A compute resource is capable of conducting computations (e.g. a virtual machine).

2.1.1. Attributes

3. The following attributes apply to this kind:

Table 2. Compute Attributes

Attribute	Type	Description
`occi.compute.architecture`	Enum (x86, x64)	CPU Architecture (e.g. x64)
`occi.compute.cores`	Float	Number of CPU cores (e.g. 1, 2)
`occi.compute.hostname`	String	Valid DNS hostname for the resource.
`occi.compute.speed`	Float (10^9 Hertz)	Clock speed in gigahertz (e.g. 2.4)
`occi.compute.memory`	Float (10^9 bytes)	RAM in megabytes (e.g. 16, 0.512)
`occi.compute.status`	Enum (active, inactive, suspended)	Status of the compute resource

2.1.2. Actions

4. A number of common states are defined:

Table 3. Compute Actions

Actions	Target State	Parameters
`http://purl.org/occi/action#start`	`active`	None
`http://purl.org/occi/action#stop`	`inactive`	*`type`* Enum (*`graceful`* [default], *`acpioff`*, *`poweroff`*)
`http://purl.org/occi/action#restart`	`active`	*`type`* Enum (*`graceful`* [default], *`warm`*, *`cold`*)
`http://purl.org/occi/action#suspend`	`suspended`	*`type`* Enum (*`hibernate`* [default], *`suspend`*)

TODO: Check supported suspend states.

2.2. Network

5. A network resource is capable of transferring data (e.g. a virtual network or VLAN).

2.2.1. Attributes

6. The following attributes apply to this kind:

Table 4. Network Attributes

Attribute	Type	Description
`occi.network.vlan`	Integer (0..4095)	802.1q VLAN ID (e.g. `4095`)

Attribute	Type	Description
`occi.network.label`	Token	Tag based VLANs (e.g. `external-dmz`)
`occi.network.address`	IPv4 or IPv6 Address (in CIDR notation)	Internet Protocol (IP) network address (e.g. `192.168.0.1/24`, `fc00::/7`)
`occi.network.gateway`	IPv4 or IPv6 Address (in CIDR notation)	Internet Protocol (IP) network address (e.g. `192.168.0.1/24`, `fc00::1/64`)
`occi.network.allocation`	Enum (`auto`, `dhcp`, `manual`)	Address allocation mechanism: • `auto` is handled automatically by infrastructure and/or guest agent • `dhcp` uses network-based allocation protocol(s) • `manual` requires preconfiguration or manual allocation

2.2.2. Actions

7. A number of common states are defined:

Table 5. Network Actions

Actions	Target State	Parameters
`http://purl.org/occi/action#down`	`inactive`	None
`http://purl.org/occi/action#up`	`active`	None

2.3. Storage

8. A storage resource is capable of mass storage of data (e.g. a virtual hard drive).

2.3.1. Attributes

9. The following attributes apply to this kind:

Table 6. Storage Attributes

Attribute	Type	Description
`occi.storage.size`	Float (10^9 bytes)	Drive size in gigabytes (e.g. `40`, `0.00144`)
`occi.storage.status`	Enum (*`online`*, *`offline`*, *`degraded`*)	Currenty status of the storage resource

2.3.2. Actions

10. A number of common states are defined:

Table 7. Storage Actions

Actions	Target State	Parameters
`http://purl.org/occi/action#backup`	`unchanged`	None
`http://purl.org/occi/action#offline`	`offline`	None
`http://purl.org/occi/action#online`	`online`	None
`http://purl.org/occi/action#resize`	`unchanged`	*`size`* float (10^9 bytes)
`http://purl.org/occi/action#snapshot`	`unchanged`	None

3. Extensions

11. Various extensions provide for more advanced management functionality such as billing, monitoring and reporting.

Bibliography

Normative References

Informative References

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