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# OCCI Infrastructure

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

**Table 1. Common Attributes**

| Attribute                    | Type   | Description                                       |
|------------------------------|--------|---|
| occi.infrastructure.hostname | String | Valid DNS hostname for the resource (may be FQDN) |

## Kinds

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

**Table 2. Kinds**

| Kind    | URI  | Description                      |
|---------|--|----------------------------------|
| compute | <code>http://purl.org/occi/kind/compute</code> | Information processing resources |
| network | <code>http://purl.org/occi/kind/network</code> | Interconnection resources        |
| storage | <code>http://purl.org/occi/kind/storage</code> | Recorded information resources   |

## Compute

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

## Attributes

The following attributes apply to this kind:

**Table 3. Compute Attributes**

| Attribute                       | Type                                 | Description  |
|---------------------------------|--------------------------------------|--|
| occi.compute.architecture       | Enum (x86, x64)                      | CPU Architecture (e.g. x64)                                  |
| occi.compute.cores              | Integer                              | Number of CPU cores (e.g. 1, 2)                              |
| occi.compute.speed              | Float (10 <sup>9</sup> Hertz)        | Clock speed in gigahertz (e.g. 2.4)                          |
| occi.compute.memory             | Float (10 <sup>6</sup> bytes)        | RAM in megabytes (e.g. 8192)                                 |
| occi.compute.memory.speed       | Float (10 <sup>9</sup> bytes/second) | RAM speed in Gbit/s (e.g. 17 for PC-8500 DDR3 per Wikipedia) |
| occi.compute.memory.reliability | Enum (standard, checksum)            | Qualitative measure of RAM reliability (e.g. ECC)            |
| occi.compute.status             | Enum (active, inactive, standby)     | Status of the compute resource                               |

## Representations

The following representation formats are identified (but not necessarily recommended) as possible candidates for this kind:

**Table 4. Compute Representations**

| Name  | Type                     | Specification |
|---|--------------------------|---------------|
| Citrix Xen Virtual Appliance (XVA) [deprecated] | application/octet-stream | VHD           |
| Open Virtualisation Appliance (OVA)             | application/ova+xml      | OVF           |
| Open Virtualisation Format (OVF)                | application/ovf+xml      | OVF           |

## Network

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

## Attributes

The following attributes apply to this kind:

**Table 5. Network Attributes**

| Attribute                            | Type                                    | Description  |
|--------------------------------------|---|--|
| <code>occi.network.vlan</code>       | Integer (0..4095)                       | 802.1q VLAN ID (e.g. 4095)   |
| <code>occi.network.label</code>      | Token                                   | Tag based VLANs (e.g. <code>external-dmz</code> )  |
| <code>occi.network.address</code>    | IPv4 or IPv6 Address (in CIDR notation) | Internet Protocol (IP) network address (e.g. <code>192.168.0.0/24</code> , <code>fc00::/7</code> )   |
| <code>occi.network.gateway</code>    | IPv4 or IPv6 Address (in CIDR notation) | Internet Protocol (IP) network address (e.g. <code>192.168.0.0/24</code> , <code>fc00::1/64</code> )   |
| <code>occi.network.allocation</code> | Enum (auto, dhcp, manual)               | Address allocation mechanism: <ul style="list-style-type: none"> <li>• <code>auto</code> is handled automatically by infrastructure and/or guest agent</li> <li>• <code>dhcp</code> uses network-based allocation protocol(s)</li> <li>• <code>manual</code> requires preconfiguration or manual allocation</li> </ul> |

## Representations

The following representation formats are identified (but not necessarily recommended) as possible candidates for this kind:

**Table 6. Network Representations**

| Name | Type | Specification |
|------|------|---------------|
| N/A  | N/A  | N/A           |

## Storage

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

### Attributes

The following attributes apply to this kind:

**Table 7. Storage Attributes**

| Attribute                             | Type                                      | Description   |
|---------------------------------------|---|---|
| <code>occi.storage.reliability</code> | Enum (transient, persistent, reliable)    | Qualitative device persistence (e.g. transient)           |
| <code>occi.storage.size</code>        | Integer (10 <sup>9</sup> bytes)           | Drive size in gigabytes (e.g. 40, 0.00144)                |
| <code>occi.storage.speed</code>       | Integer (10 <sup>6</sup> bytes/second)    | Drive speed in MB/s (e.g. 600 for SAS/SATA-600 Wikipedia) |
| <code>occi.storage.status</code>      | Enum (online, offline, standby, degraded) | Currenty status of the storage resource                   |

### Representations

The following representation formats are identified (but not necessarily recommended) as possible candidates for this kind:

**Table 8. Storage Representations**

| Name   | Type                        | Specification |
|--|-----------------------------|---------------|
| ISO image format                             | application/x-iso9660-image | ISO           |
| Microsoft Virtual Hard Disk                  | application/octet-stream    | VHD           |
| QEMU qcow2 image format                      | application/x-qemu-qcow2    | QCOW2         |
| Raw disk format (IMA, IMG, RAW, etc.)        | application/octet-stream    | RAW           |
| Virtualbox Virtual Disk Image [undocumented] | application/octet-stream    | VDI           |
| VMware Virtual Disk Format                   | application/octet-stream    | VMDK          |

## Extensions

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

## Bibliography

### Normative References

### Informative References

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