

Proposed new version of the Cloud Accounting Usage Record

New usage and summary record requirements suggest an update is needed for the Cloud Usage Record; this information is for discussion and Resource Providers should continue to use the current version for sending records to the Cloud Accounting System until we agree on the necessary changes.

Here are some ideas on what will need accounting:

- Number of VMs instantiated by user
- Number of VMs instantiated by RP
- Number of VMs instantiated in total
- Number of VMs instantiated by image

Reasons for changes to current version of the cloud accounting record:

- The RecordIdentity field does not provide useful information, nor can it be guaranteed to be unique, which was the original intention in creating this field. The new alternative to uniquely identify a Federated Cloud virtual machine is the VMUUID field. OpenStack always creates a UUID (Universally Unique IDentifier) for each new virtual machine; we believe this is also the case for OpenNebula – to be confirmed.
- The MachineName field remains however:
 - a. it has been renamed to LocalVMID to avoid confusion as MachineName has a different meaning in the OGF Usage Record;
 - b. although this was originally expected to be part of a unique identifier of a VM at a particular site, it is understood this can no longer be guaranteed. However, it remains a useful field for the Resource Providers so will remain in the record.
- The ZoneName field will be removed. The meaning of “zone” is ambiguous, it could refer to the OpenStack implementation of zones although it was originally proposed to show which region the VM was created in.
- The TimeZone field will be removed; it was highlighted by the OGF Usage Record working group that this could be derived from other information in the record if necessary.
- The SuspendTime field has been changed to SuspendDuration to contain the amount of time the VM has been in a “suspended” state.

Other information related to the UR:

1. Many of the properties defined in the Usage Record may be set to NULL as different Resource Providers may publish different sets of data, but we want only one Usage Record, usable by all.
2. A VM might be in one of three states: started, stopped and suspended. This field is based on the existing OGF UR “Status” property but it may be possible to extend the implementation of this property to include some VM-specific statuses if the existing ones are not deemed appropriate.
3. We have job accounting and storage accounting systems and their related usage records already - we therefore account for jobs and storage using these existing records/methods.

Cloud Usage Record Property	Definition
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VMUUID	Unique identifier of a Virtual Machine (String)
Site	GOCDB SiteName - extend service types in GOCDB to include cloud resource providers (String)
LocalVMID	VM Id (String) e.g. ID assigned by the cloud management system
LocalUserID	Local user name (String)
LocalGroupID	Local group name (String)
GlobalUserName	Global identity of user (certificate DN) (String)
FQAN	Use if VOs are part of authorization mechanism (String)
Status	Completion status - completed, started or suspended (String)
StartTime	Must be set if Status = started (Timestamp)
EndTime	Set to NULL until Status = completed (Timestamp)
SuspendDuration	Set when Status = suspended. Amount of time - seconds (INT)
WallDuration	WallClock time - actual time used - seconds (INT)
CPUDuration	CPU time consumed – seconds (INT)
CPUCount	Number of CPUs (INT)
NetworkType	Description (String)
NetworkInbound	GB received (INT)
NetworkOutbound	GB sent (INT)
Memory	Memory allocated to the VM (INT)
Disk	Size in GB (INT)
StorageRecordIdentity	Link to other associated storage record (String)
ImageID	Every image should have a unique ID associated with it – these need to be unique across Resource Providers, a mechanism for creating these is under investigation (VMcaster?) (String)
CloudType	e.g. OpenNebula, OpenStack (String)