

Draft Cloud Accounting Usage Record Schema v0.4

Draft 2 – 28/10/2014 – John Gordon

Some assumptions related to the version below:

1. Additions to v0.2 currently in use. There is a v0.3 in existence making proposals that have not yet been implemented.
2. CloudComputeService was chosen as a name to signify a level of granularity of cloud services within a site. cf ComputingService and StorageService in GLUE2.0. I am told it is the name currently in the working draft of an extension to GLUE 2 for clouds.
3. For normalization we took the name Benchmark from the OGF UR 2.0 <http://www.ogf.org/documents/GFD.204.pdf> For Grid CPU accounting, APEL currently uses ServiceLevel from CAR1.0. This means something else in UR 2.0.
4. We considered adding the profile name used when instantiating the VM but (in OpenStack) could not see how to retrieve this information. We believe that Memory, Disk, and cpucount captures the relevant information. ||
5. ImageId suggestions following a discussing within the FedCloud Task Force
6. This is a still a keyword-value pair version of the schema. Migration to a version based on OGF UR 2.0 is work for a future project.
7. No changes to time durations. Durations for running VMs are from starttime to the time the record was cut. This may change in future if we decide to change to a series of records covering a set of contiguous time periods in order to assign usage to (eg) months.

Assumptions in common with earlier versions

8. Many of the properties defined in the Usage Record may be set to NULL, this is based on the assumption that different Resource Providers may want to publish different sets of data, but we want only one Usage Record, usable by all.
9. The fields for GlobalUserName and FQAN relate to an existing method of authorizing grid users, if this authorization mechanism were to be used for cloud usage as well then these would provide a method of associating VM usage with a user and then querying usage in a portal could be based on user, VO etc.
10. I suggest that the RecordId field contains a concatenation of CurrentTime, SiteName and MachineName. (Note: CurrentTime is the time the record was created on the client machine, Machine Name is the VMid)
11. 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.

The following table provides an revised draft schema v0.4 with changes in bold and flagged NEW:

| Cloud Usage Record Property | Type | Null | Definition |
|----------------------------------|---------------------|------|---|
| VMUUUID | varchar(255) | No | Virtual Machine's Universally Unique Identifier (do we define this anywhere?) |
| SiteName | varchar(255) | No | GOCDDB SiteName - extend service types in GOCDDB to include cloud resource providers |
| CloudComputeService (NEW) | varchar(255) | | Name identifying cloud resource within the site. Allows multiple cloud resources within a site. i.e. a level of granularity. |

Comment [jcg1]:

Comment [EF2]: For most cases disk and cpucount should be enough. imagine profiles with same number of VMs running in very different hardware configurations. A site wanting to charge different for different VMs. OpenStack does store that information. It can be retrieved when querying the usage records.

Comment [jcg3]: How is it recorded? Is this met by the benchmark power? Or are you talking about things like...

Comment [EF4]: Not in the list

Comment [jcg5]: Ah yes, this was VMUUUID 0.1 -> 0.2.

| | | | |
|----------------------------|---------------------|----|--|
| MachineName | varchar(255) | No | VM Id |
| LocalUserId | varchar(255) | | Local user name |
| LocalGroupId | varchar(255) | | Local group name |
| GlobalUserName | varchar(255) | | Global identity of user (certificate DN) |
| FQAN | varchar(255) | | Use if VOs part of authorization mechanism |
| Status | varchar(255) | | Completion status - <u>completed, started or suspended</u> |
| StartTime | datetime | | Must be set if Status = started |
| EndTime | datetime | | Set to NULL until Status = completed |
| SuspendDuration | datetime | | Set when Status = suspended (Timestamp) |
| WallDuration | int | | WallClock time - actual time used |
| CpuDuration | int | | CPU time consumed (Duration) |
| CpuCount | int | | Number of CPUs allocated |
| NetworkType | varchar(255) | | |
| NetworkInbound | int | | GB received |
| NetworkOutbound | int | | GB sent |
| Memory | int | | Memory allocated to the VM |
| Disk | int | | Size in GB allocated to the VM |
| BenchmarkType (NEW) | varchar(255) | | Name of benchmark used for normalization of times (eg HEPSPROC6) |
| Benchmark (NEW) | Decimal | | Value of benchmark of VM using ServiceLevelType benchmark' |
| StorageRecordId | varchar(255) | | Link to other associated storage record |
| ImageId | varchar(255) | | Every image has a unique ID associated with it. - For images from the EGI FedCloud AppDB this should be VMCATCHER_EVENT_AD_MPURI - for images from other repositories it should be a vmcatcher equivalent For local images - os_tpl mixin |
| CloudType | varchar(255) | | Type of cloud infrastructure: OpenNebula; OpenStack; Synnefo; etc. |

Comment [EF6]: Is this the name of the user to the VM?

Comment [jcg7]: No it is the sid for the VM. ie not globally unique VMUUID.

Comment [EF8]:

Comment [EF9]: Shouldn't it be on suspended or not, is consuming resources

Comment [jcg10]: probably yes change if to when.

Comment [EF11]: Is there any possible values here? Does it refer to technology (eth, ib) or things like IP/private IP?
I miss the IPs associated to the VM that is more a tenant-level resource and it may need to be accounted for else or with a different type of resource

Comment [jcg12]: I don't think place holder until we agree the semantics. Ideas anyone?
i do not think we want to record addresses. TMI. Is one likely to be addresses? If so we could count them

Comment [EF13]: What is an associated storage record? An attached volume?

Comment [jcg14]: Again a placeholder see it as the unique ids of one or more records stored elsewhere.