

CMM - II

New Constructs for Resource Modeling

A resource's manageability information is modeled using the XML schema. CMM-defined extensions and additional data types (i.e., XML attributes) allow those manageable resources to provide additional information to the management applications.

In order to better capture the data, CMM defined the following new data types: counter and gauge. In addition to these data types, CMM defined XML attributes that are classified as:

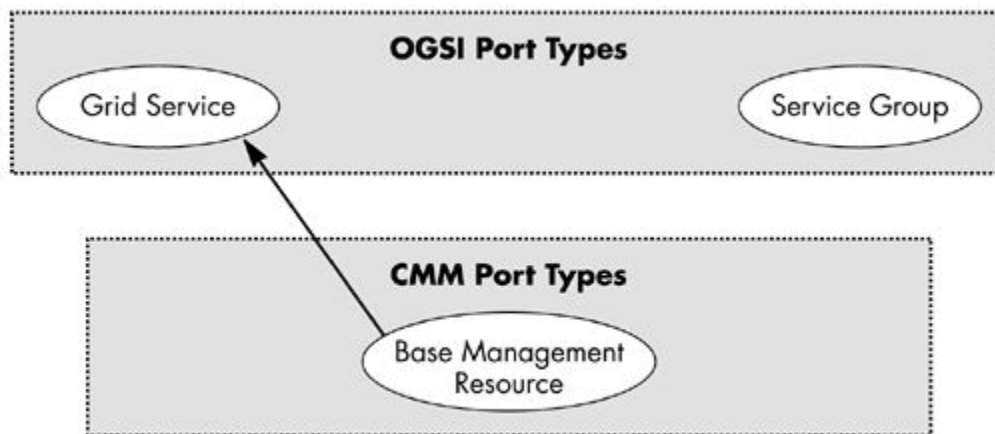
- Versioning related
 - Version
 - Deprecated
 - Experimental
- Unit related
 - Units
- Lifecycle characteristics
 - Valid
 - Changeable
 - Volatile
 - Latency

Let us now examine the core port types exposed by the common management model.

CMM-Defined Manageability Interfaces

The CMM-defined manageability interfaces are the WSDL portTypes that are defined as part of the management interfaces of a manageable resource. We can see that CMM is trying to factor out the common set of interfaces that can function against all the resources. These interfaces are called "canonical port types" that provide a consistent behavior and functionality to the management applications (Figure 7.2).

Figure 7.2. CMM manageability port types.



There are two most important canonical port types defined for CMM. As we have previously seen in the OGSi specification, the GridService port type is the core interface and is present in all grid services, and it provides a set of common behaviors and operations. The other interface defined by CMM is the BaseManageablePortType. This contains common behaviors (e.g., service data) that must be implemented by all manageable resources. The behaviors represented by this port type include resource lifecycle data, relationships to other resource types and data, searchable resource properties, and resource groups to which this resource instance belongs within the respective environment.

In addition to these standard canonical port types, a CMM resource can utilize other grid service port types as defined by the OGSi specification. One commonly utilized port type is service group; it is utilized to represent a grouping and collection behavior for a certain group of resources, or for enumeration of resources of the same types.

Resource Modeling Concepts

The primary components of the Common Management Model are data types (i.e., existing and new), additional XML attributes, service data, and their associated service data descriptions and port types.

In general, a resource type is represented as a port type, the managed properties of the resource are represented as service data of the port type, and methods on the resource are port type operations.

Let us now explore an important modeling concept of the CMM service composition, and how it models the granular resource models. The resources defined using CMM are generally coarse-grained services rather than granular or normalized resource model definitions. In other words, the service is self-contained with normalized resource models, and contains a few relationships to other services.

We further explore this concept by using the case of a disk resource that has a model for manageability containing characteristics of the disk, a model for a set of error statistics, a model for its disk metrics, and a relationship model to a computing system resource. When we set forth to model this as a CMM service, all these behaviors are aggregated into the service; a CMM service is composed of manageability characteristics, error statistics, and metric models. In addition to this notion, all of this expresses a containment relationship to a computer system.

Let us now explore further to better understand some of the core concepts defined in the CMM specification. These concepts are as follows:

- Service data and resource properties. Properties of a manageable resource are expressed as service data and grid service port type operations. "findServiceData" and "setServiceData" can be utilized to access and modify these properties.
- Base management port type and its behavior. This (BaseManageableResource) canonical port type contains service data elements that must be implemented by all manageable resources. This port type extends the OSGI GridService port type and adds service data that has valuable information about a manageable resource. Table 7.1 lists the common service data elements of this port type.

Source : <http://elearningatria.files.wordpress.com/2013/10/ise-viii-grid-computing-06is845-notes.pdf>