SERVICE DOMAINS

The OGSA service domain architecture proposes a high-level abstraction model to describe the common behaviors, attributes, operations, and interfaces to allow a collection of services to function as a single unit. This is accomplished through collaboration with others in a fully distributed, heterogeneous, grid-enabled environment. This provides the users of any service domain access environment to be aggregated into the appropriate services operations, simply, as if they are merely a part of a single service.

In general, the services in a service domain can be thought of as the following:

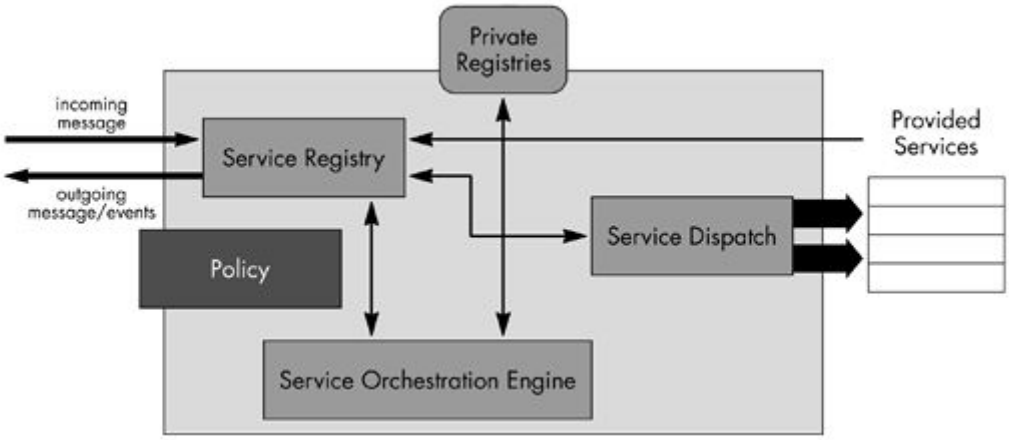
- Resource oriented, including CPU, storage space, and network bandwidth
- Systems and infrastructure oriented, including security, routing, and management
- Application-oriented services such as purchase orders, stock transactions, insurance, etc.

These domains can be homogeneous or heterogeneous, compute intensive, transactional, and business process function providers. Multiple service domains can be composed and mixed for the requirement of the enterprise.

As depicted in Figure 7.4, service domain components provide the following functionalities:

- Service registration and collection
- Service routing and selection
- Service interoperation and transformation
- Flexible service composition
- Automatic service orchestration

Figure 7.4. The service domain and orchestration.



Based upon this discussion, we can see that the OGSA architecture for service domain defines an OGSI ServiceCollection port type and provides functionalities for register (add) and unregister (remove) service instances from the service domain. The core concept of service domain surrounds these interfaces and behaviors that it exposes.

Let us now further explore some of these behaviors and interfaces. These behaviors can be thought of as:

- Filter: Supports choosing/selecting a service instance as part of a service collection.
- Selection: Enables choosing a particular service instance as part of the service collection.
- Topology: Allows a service collection to impose some topological order for the instances of the services.
- Enumeration: Enumerates the services in a service domain and/or across other service domains.
- Discovery: Allows a service domain to discover services from one or more registries and/or other service domains. These discovered services are included as part of their collection.
- Policy: Provides some "intelligence" on the service domain operations. These types of policy rules include (but are not limited to) service-level definitions, recovery, event handling, discovery/selection, service mapping, and business guidelines.