

## DISCUSSION ON RELATIONSHIP BETWEEN WEB SERVICE AND GRID SERVICE

Grid services are stateful Web services with a well-defined set of interfaces and behaviors for interaction. The following discussion explores the above concepts.

### Interaction Aware State Information

This discussion addresses the previous introductory topic, interaction aware state information, which is related to state management. Figure 4.1 depicts these state machine scenarios we have just introduced, and subsequent discussions further examine this concept.

Figure 4.1. Information aware stateless Web services.

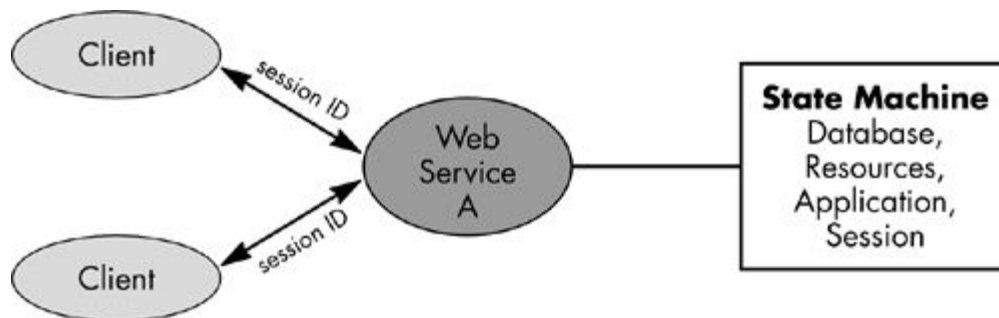
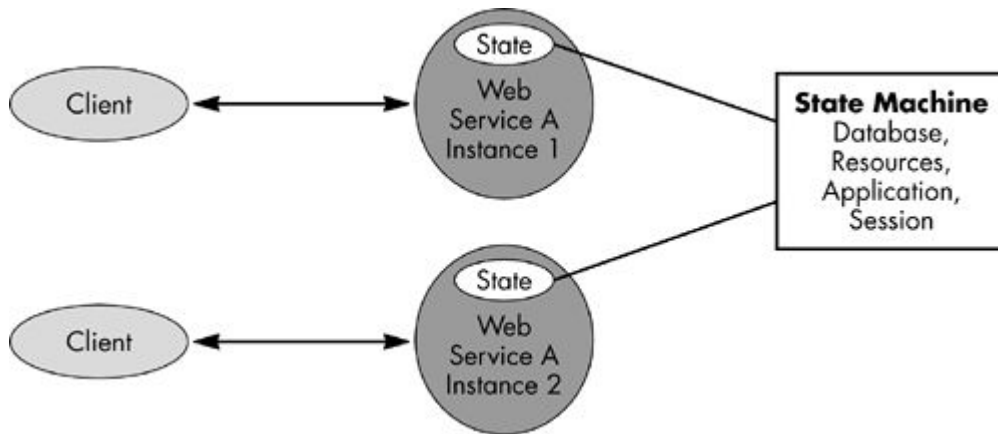


Figure 4.1 depicts a client talking to a Web service named "A." In this scenario, the client is maintaining some session ID, and each time it interacts with the Web service, it passes that correlation information (e.g., purchase order key) to the service end point. This enables the runtime function to dispatch the calls to any Web service of the type "A." The service is then able to handle the request for the client, based upon the session ID passed along with the respective request. This is a very scalable approach.

### Application Aware State Information

This discussion addresses the previous introductory topic, application aware state information, which is related to state management. Figure 4.2 depicts these state machine scenarios we have just introduced, and subsequent discussions further examine this concept.

Figure 4.2. Application-based stateful Web services.



### Stateful Web Services

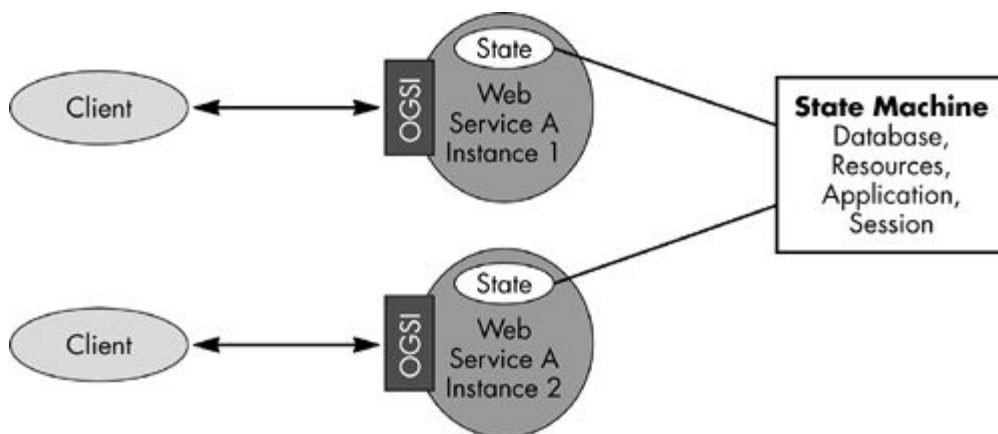
In this case, the service itself maintains some state information for the client. Hence, each client is provided a specific instance of a Web service to engage. This is analogous to the object-based system, whereby the object clients create an object instance of the type of object class, and then maintains a pointer to that instance, and subsequently interacts with that instance. Each object instance maintains its nonstatic state information in its memory location.

Similarly, the Web service client maintains a reference to an instance of the service, and then communicates to that specific service instance. The instance holds the state of the client, and can make and execute the business decision based on that current state information. For example, the service instances maintaining a purchase order within a given instance.

### Grid Services

This discussion provides information related to grid services, and the comparisons to stateful Web services. Figure 4.3 shows the OGSI interaction with the stateful Web services machine(s).

Figure 4.3. Grid services.



Grid services are, in fact, stateful Web services. The service itself maintains some state information, and it exposes a set of standard interfaces to enable interactions with its client. These exposed interfaces enable the client to get/set the state information, in addition to the normal service behaviors. These exposed interfaces are defined in the OGSi specification. This specification provides mechanisms to:

- Service lifecycle management

- Instance state introspection and discovery

- Instance state change event notification

In addition to the above behaviors, OGSi provides for a unique handle for the stateful Web service, called the grid service handle (GSH). Generally speaking, a grid service can be accessed through a grid service reference (GSR), which then forms the binding-level information to access a service instance. This interface-enabled access to a stateful Web service then provides interoperability at the message level.

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