Web Services and OGSA

Tal Lavian, Phil Wang

What Are Web Services?

- Conventions for program-to-program Communication
- Built on existing Web infrastructure - Usually HTTP carrying XML messages
- Adds WSDL (service descriptions), UDDI (service directory), and SOAP (XML-based RPC), plus a variety of XML encodings of data

Characteristics of Web Services

- Easy to implement on web servers – development tools hide most of the messy details
- Message-oriented client-server protocol, stateless between messages (except for state kept by the client or server application)
- No standards for service behavior – services can do anything any way they want

OGSA/OGSI and Web Services

- OGSA builds on Web Services – OGSA services ***are*** Web Services
- OGSA model isn't a perfect fit for the Web Services model
- OGSA adds constraints and facilities specific to Grid requirements

OGSA Model

- Job scheduling model vs. Web Services' atomic transaction model
- Jobs run anywhere their resource requirements can be met vs. Web Services' stationary service model
- Complex cross-organizational and resource issues are not addressed in Web Services

OGSA Extensions to Web Services

- Service life cycles – service instances can be created and destroyed by clients – mainly used for job scheduling
- Certain standard interfaces for services, including a publish/ subscribe/notify interface
- State data for services, accessible to clients via a standard interface – but falls short of a database interface

OGSA Extensions, continued

- Service registration and discovery – analogous to UDDI but with service instance data as well
- Single sign-on security model using SSL and a proxy certificate concept
- Use of job schedulers / resource brokers to manage services

OGSA Extensions, continued

- Standard logging facility regardless of platform (based on the Jakarta commons logging API)
- Standard error message format

What About Optical Network Allocation?

- Should conform to OGSA where there's no good reason not to, for example security, logging, and error message conventions.
- Resource discovery interface to brokers and schedulers will need to be designed for best interoperation.
- Current resource brokers don't deal with network resources, so there is a large gap to be filled

Optical Network Allocation, continued

- The notification interface would be useful for asynchronous callbacks.
- Network allocation fits the web service model pretty well, so some OGSA extensions are irrelevant.
- Transient services and service state data are not especially relevant