OGSA Basic Execution Service (BES)

Purpose: Provide a simple web service whereby a client can send requests to initiate, monitor and manage computational activities.

Description: To enable the management of remote computational activities, OGSA-BES defines three web service port-types, along with an extensible *State Model* and a minimal *Information Model*. The web service port-types are:

- **BES-Factory** allows ordinary clients to initiate, monitor and manage *sets* of activities, e.g., CreateActivity, GetActivityStatuses, TerminateActivities
- **BES-Activity** allows ordinary clients to manage *individual* activities
- **BES-Management** allows system admins to monitor and control the BES itself

Activities to be created are described with the Job Submission Description Language (JSDL). Created activities are identified using a WS-Addressing Endpoint Reference (EPR). While all BES operations that generate EPRs must be compliant with WS-Addressing EndpointReferenceTypes, some implementations may include additional elements, such as those defined with the WS-Naming specification.

The OGSA-BES State Model includes states for *Pending, Running, Finished, Terminated*, and *Failed*. These states can be extended to include sub-states, e.g., *Running:Staged-in, Running:Staged-out,* or *Running:Suspended*.

The OGSA-BES Information Model defines both BES-specific and Basic Resource-specific attributes that can be queried through the BES service ports. Examples of BES-specific attributes include ActivityReference and TotalNumberOfActivities. Examples of Resource-specific attributes include OperatingSystem and CPUArchitecture. These resources are an initial minimal set until other work with OGF matures to define a more comprehensive informational model.

OGSA-BES supports a number of extensions that can be determined by checking the BESExtensions attribute. These extensions include:

- **Idempotent Execution:** A client can provide a client-generated identifier whereby BES will not create a second activity if it already exists.
- **Subscription to Notification Events:** BES clients can subscribe to activity state change events by using either the WS-Eventing or WS-Notification protocols
- **Lifetime Management:** BES implementations may allow the specification of an activity's WS-ResourceLifetime termination time resource property

OGSA-BES is part of the HPC-Profile.

Further Information: Link to the latest draft of the document or contact one of the following: Andrew Grimshaw, Darren Pulsipher, Steven Newhouse