SPRUCE
A Special Priority and Urgent Computing Environment for supporting Urgent High-Performance Computing

Motivation
Modeling and simulation using high-performance computing are playing an increasingly important role in decision-making and prediction. For time-critical emergency decision support applications, such as severe weather prediction, flood and influenza modeling, late results may be useless. A specialized infrastructure is needed to provide computational resources quickly, automatically and reliably. SPRUCE is a system for supporting urgent computing on both traditional supercomputers and distributed Grids.

SPRUCE uses existing resources to provide high priority for emergency applications, and requires minimal changes to existing workflows. Both Grid based (e.g. Globus) as well as direct submission environments are supported. Work is in progress to provide a web services interface to the SPRUCE gateway.

Deployment Status
SPRUCE is a TeraGrid Science Gateway, currently deployed at the UC/ANL, Purdue and TACC resource providers. Work is in progress to extend the system to include the NCSA, Indiana and SDSC resources. As of now, we support Torque and LSF, and are working on adding support for LoadLeveler and PBS Pro. This poster presents requirements for a system supporting urgent computing and illustrates how the SPRUCE architecture meets these requirements.

The SPRUCE Gateway allows for three administrative domains, each of which has token issuing and monitoring powers for their respective resources. The Virtual Org (e.g. TeraGrid) administrators can issue cross-site tokens to teams that may require co-scheduling capabilities.