SPRUCE
Special PRiority and Urgent Computing Environment

http://spruce.teragrid.org/

Pete Beckman
Argonne National Laboratory
University of Chicago
Modeling and Simulation are critical Part of Decision Making
I Need it Now!

- Applications with dynamic data and *result deadlines* are being deployed
- Late results are useless
  - Wildfire path prediction
  - Storm/Flood prediction
  - Influenza modeling
- Some jobs need priority access
  “Right-of-Way Token”
**Example 1: Severe Weather Predictive Simulation from Real-Time Sensor Input**

Source: Kelvin Droegemeier, Center for Analysis and Prediction of Storms (CAPS), University of Oklahoma. Collaboration with LEAD Science Gateway project.
Example 2: Real Time Neurosurgical Imaging Using Simulation (GENIUS project – HemeLB)

Data is generated by MRA scanners at the National Hospital for Neurosurgery and Neurology.

Our graphical-editing tool

Getting the Patient Specific Data

512^2 pixels x 100 slices, res: 0.46875^2 mm x 0.8 mm

2048^2 x 682 cubic voxels, res: 0.46875 mm

Source:
Peter Coveney, GENIUS Project
University College London
Example 3: SURA Coastal Ocean Observing Program (SCOOP)

Source: Center for Computation and Technology, Louisiana State University
How can we get cycles?

- Build supercomputers for the application
  - Pros: Resource is ALWAYS available
  - Cons: Incredibly costly (99% idle)
  - Example: Coast Guard rescue boats

- Share public infrastructure
  - Pros: low cost
  - Cons: Requires complex system for authorization, resource management, and control
  - Examples: school buses for evacuation, cruise ships for temporary housing

INSTRUCTIONS
DO NOT OPEN UNTIL NEEDED TO AUTHENTICATE EMERGENCY ACTION NOTIFICATION OR TERMINATION MESSAGE. (Use authenticator words below for test messages.)

EBS AUTHENTICATOR LIST D
OCTOBER 1973

<table>
<thead>
<tr>
<th>ACTIVATION</th>
<th>TERMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 GLORY</td>
<td>1 AFTERPIECE</td>
</tr>
<tr>
<td>2 CHINAMAN</td>
<td>2 ORGY</td>
</tr>
<tr>
<td>3 FANFOLD</td>
<td>3 HEMPSEED</td>
</tr>
<tr>
<td>4 RATIONAL</td>
<td>4 FORTRESS</td>
</tr>
</tbody>
</table>
Introducing SPRUCE

• The Vision:
  ◦ Build cohesive infrastructure that can provide urgent computing cycles for emergencies

• Technical Challenges:
  ◦ Provide high degree of reliability
  ◦ Elevated priority mechanisms
  ◦ Resource selection, data movement

• Social Challenges:
  ◦ Who? When? What?
  ◦ How will emergency use impact regular use?
  ◦ Decision-making, workflow, and interpretation
Calling cards are in widespread use and easily understood by the NS/EP User, simplifying GETS usage.

GETS priority is invoked “call-by-call”

GETS is a ‘ubiquitous’ service in the Public Switched Telephone Network. If you can get a DIAL TONE, you can make a GETS call.
SPRUCE Architecture Overview (1/2)
Right-of-Way Tokens

Event

1 Automated Trigger

2 First Responder

SPRUCE Gateway / Web Services

Human Trigger

Right-of-Way Token

TeraGrid
SPRUCE Architecture Overview (2/2)
Submitting Urgent Jobs

1. User Team
2. Urgent Computing Job Submission
3. Conventional Job Submission Parameters
4. Authentication
5. Priority Job Queue
6. Supercomputer Resource

Choose a Resource
SPRUCE Job Manager
Local Site Policies

Urgent Computing Parameters
Summary of Components

- Token & session management
  - admin, user, job manager

- Priority queue and local policies

- Authorization & management for job submission and queuing

[SPRUCE Server (WS interface, Web portal)]

[configuration & policy]

[installed software]
Internal Architecture

Web Portal or Workflow Tools
- AJAX
- PHP / Perl

Client Interfaces

SPRUCE User Services || Validation Services
- Axis 2 Web Service Stack
- Tomcat Java Servlet Container
- Apache Web Server

Central SPRUCE Server

Computing Resource: Job Manager & Scripts
- Java
- Axis2
- PHP / Perl

Client-Side Job Tools

SOAP Request

MySQL

JDBC

Future work

Mirror
Site–Local Response Policies: How will Urgent Computing be treated?

- “Next–to–run” status for priority queue
  - wait for running jobs to complete
- Force checkpoint of existing jobs; run urgent job
- Suspend current job in memory (kill –STOP); run urgent job
- Kill all jobs immediately; run urgent job

- Provide differentiated CPU accounting
  - “Jobs that can be killed because they maintain their own checkpoints will be charged 20% less”
- Other incentives
Emergency Preparedness Testing: “Warm Standby”

- For urgent computation, there is no time to port code
  - Applications must be in “warm standby”
  - Verification and validation runs test readiness periodically (Inca, MDS)
  - Reliability calculations
  - Only verified apps participate in urgent computing

- Grid–wide Information Catalog
  - Application was last tested & validated on <date>
  - Also provides key success/failure history logs
Resource Advisor

• Purpose
  ✷ Given a set of distributed resources and a deadline, how does one select the “best” resource on which to run?
    ▪ Analyze historical and live data to determine the likelihood of meeting a deadline.

• Generate a bound for the total turnaround time
  ✷ Generate bounds for:
    • File Staging ($F_T$)
    • Allocation time (e.g., queue delay) ($A_T$)
    • Execution time ($E_T$)
  ✷ Overall turnaround time = $F_T + A_T + E_T$
Selecting a Resource

Trigger

Urgent Severe Weather Job
Deadline: 90 Min

Historical Data
- Network bandwidth
- Queue wait times
- Warm standby validation
- Local site policies

Live Data
- Network status
- Job/Queue data

Application-Specific Data
- Performance Model
- Verified Resources
- Data Repositories

Advisor

“Best” HPC Resource

Best HPC Resource

Advisor

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Highly Available Resource Co-allocator (HARC)

- Some scenarios have definite early notice
  - SCOOP gets hurricane warnings a few hours to days in advance
  - No need for drastic steps like killing jobs

- HARC with SPRUCE for reservations
  - Reservation made via portal will be associated to a token
  - Any user can use the reservation if added onto that active token
  - Can bypass local access control lists
Bandwidth Tokens
Deployment Status

- Deployed and Available on TeraGrid –
  - UC/ANL
  - NCSA
  - SDSC
  - NCAR
  - Purdue
  - TACC

- Other sites
  - LSU
  - Virginia Tech
  - LONI

<table>
<thead>
<tr>
<th>SITE</th>
<th>CONFIGURATION</th>
<th>POLICY</th>
<th>SCHEDULER</th>
<th>PROCESSORS</th>
<th>CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC/ANL IA64 usage guide</td>
<td>Intel IA-64, 62 nodes</td>
<td>elevated-priority next-to-run pre-emption</td>
<td>Torque/Moab</td>
<td>124/124 (Production)</td>
<td>Ti Leggett</td>
</tr>
<tr>
<td>UC/ANL IA32 usage guide</td>
<td>Intel IA-32, 96 nodes</td>
<td>elevated-priority next-to-run</td>
<td>Torque/Moab</td>
<td>192/192 (Production)</td>
<td>Joe Insley</td>
</tr>
<tr>
<td>NCSA Mercury usage guide</td>
<td>Intel IA-64, 631 nodes</td>
<td>next-to-run</td>
<td>Torque/Moab</td>
<td>TBD/1262 (Production)</td>
<td>Peter Enstrom</td>
</tr>
<tr>
<td>Purdue Lear usage guide</td>
<td>Dell EM64T Cluster, 512 nodes</td>
<td>next-to-run</td>
<td>PBS Pro</td>
<td>1024/1024 (Upgrading)</td>
<td>Preston Smith</td>
</tr>
<tr>
<td>SDSC Dataster usage guide</td>
<td>IBM P series, 272 (9-way) P655+ and 6 (32-way) P690</td>
<td>next-to-run</td>
<td>LoadLeveler/Catalina</td>
<td>2368/2368 (Production)</td>
<td>Tony Vu</td>
</tr>
<tr>
<td>SDSC OnDemand usage guide</td>
<td>Rocks cluster, 64 nodes</td>
<td>elevated-priority next-to-run</td>
<td>SGE</td>
<td>236/2356 (Pre-production)</td>
<td>DJ Choi</td>
</tr>
<tr>
<td>TACC Lonestar usage guide</td>
<td>Dell PowerEdge 1955, 1460 nodes</td>
<td>next-to-run</td>
<td>LSF</td>
<td>16/5840 (Production)</td>
<td>Bill Barth</td>
</tr>
<tr>
<td>NCAR Frost usage guide</td>
<td>Single-rack BG/L, 1024 nodes</td>
<td>next-to-run</td>
<td>Cobalt</td>
<td>2048/2048 (Production)</td>
<td>Jason Cope</td>
</tr>
</tbody>
</table>
Roadmap

- Ongoing work
  - SPRUCE integration with Condor
  - Policy mapping for resources and applications
  - SPRUCE integration with network bandwidth
  - WS–GRAM compatibility
  - Notification system with triggers on token use
  - INCA Q/A monitoring system for SPRUCE services

- Future Work
  - Automatic restart tokens
  - Aggregation, Extension of tokens, ‘start_by’ deadlines
  - Encode (and probe for) local site policies
  - Warm standby integration
  - Data movement, network reservation, data storage
  - Failover & redundancy of SPRUCE server
Imagine…

- A world-wide system for supporting urgent computing on supercomputers
- *Slow, patient* growth of large-scale urgent apps
- Expanding our notion of priority queuing, checkpoint/restart, CPU pricing, etc
- A standardized set of web services for “request VM”, including all the complicated small bits
  - DHCP, VLANs, DNS, local storage, remote storage
- For Capability: 10 to 20 supercomputers available on demand
- For Capacity: Condor Flocks & Dynamic VMs provide availability of 250K “node instances”
Questions? Ready to Join?

spruce@ci.uchicago.edu

http://spruce.teragrid.org/
Screen Shots

Running Urgent Jobs
Direct SPRUCE Job Submission (No Grid Middleware)

# spruce_sub urgency=red spruce_test.pbs
No Valid Token found for user = beckman, aborting job submission

<validate token at SPRUCE gateway>

# spruce_sub urgency=red spruce_test.pbs
240559

# qstat

<table>
<thead>
<tr>
<th>JobId</th>
<th>Name</th>
<th>User</th>
<th>S</th>
<th>Queue</th>
</tr>
</thead>
<tbody>
<tr>
<td>240552</td>
<td>Cylinder-1</td>
<td>gustav</td>
<td>Q</td>
<td>dqque</td>
</tr>
<tr>
<td>240556</td>
<td>STDIN</td>
<td>lgrinb</td>
<td>Q</td>
<td>dqque</td>
</tr>
<tr>
<td>240559</td>
<td>spruce-job</td>
<td>beckman</td>
<td>R</td>
<td>spruce</td>
</tr>
</tbody>
</table>
SPRUCE Job Submission via Globus

# grid-proxy-init
Enter GRID pass phrase for this identity: **************
Your proxy is valid until: Sat Nov 18 03:21:30 2007

# cat globus_test.rsl
<br/>
<br/>(resourceManagerContact =
   tg-grid1.uc.teragrid.org:2120/jobmanager-spruce)
(executable = /home/beckman/spruce/mpihello)
<br/>
<br/>(urgency = red)
<br/>
<br/>

# globusrun -o -f globus_test.rsl
### Experiment Builder Portlet

**User:** Marcus Christie

#### Experiments

<table>
<thead>
<tr>
<th>Experiment Name</th>
<th>Description</th>
<th>Created On</th>
<th>Last Updated On</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>sc06 demo IU booth</td>
<td>Dennis is showing how to create an experiment.</td>
<td>Mon Nov 13 21:00:46 EST 2005</td>
<td>Mon Nov 13 20:00:49 EST 2005</td>
<td>WAITING</td>
</tr>
<tr>
<td>dm1</td>
<td>No description</td>
<td>Mon Nov 13 19:35:50 EST 2005</td>
<td>Mon Nov 13 18:35:51 EST 2005</td>
<td>WAITING</td>
</tr>
<tr>
<td>spruce2</td>
<td>No description</td>
<td>Sun Nov 12 17:51:32 EST 2005</td>
<td>Sun Nov 12 16:51:34 EST 2006</td>
<td>RUNNING</td>
</tr>
<tr>
<td>spruce1</td>
<td>No description</td>
<td>Sun Nov 12 17:29:20 EST 2005</td>
<td>Sun Nov 12 16:29:23 EST 2006</td>
<td>RUNNING</td>
</tr>
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</table>
Region Type Selection
- CONUS
- Regional 5km
- Regional 20km

Forecast Start Time
Dates and times in Greenwich Mean Time (GMT)
- Now (in other words, run a forecast using the most recent data available)
- Please specify:
  Start Date: 2005/11/14
  Start Hour: 0

Forecast Duration: 12 hours

Using your mouse, drag and drop the center of the model domain grid to position it as desired on the map.

Forecast Domain
center latitude: 44.6530
center longitude: -68.4668

Drag the balloon (●) to move the region.

Map Layers
- Radar Sites
- Google Streets (on top)
- NEXRAD Doppler (credit: NESDIS)
Experiment Builder Portlet

Experiment Wizard

User: Marcus Christie  Project: SPRUCE Tests
Name: spruce_demo
Description:
Workflow: Test Workflow: Echo User Input

Review and Submit

You may use the "Back" button to change or review in greater detail your selections for this experiment. Optionally, you may start the workflow composer in monitoring mode prior to launching the workflow so that you can see a visualization of the workflow's progress as well as the workflow's notifications as they arrive. Once you are satisfied with the workflow's configuration, click the "Launch" button to start its execution.

- Run this workflow with SPRUCE
  - AAE7
  - 8B3D
  - 9921
  - 1C57

- Urgency level:
  - Orange - High
  - Yellow - Important
  - Orange - High
  - Red - Critical

< Back  Next >  Cancel  Launch
SUCCESSFULLY CREATED NEW EXPERIMENT. YOU CAN MONITOR YOUR EXPERIMENT USING THE WORKFLOW COMPOSER. USING ALREADY ACTIVE TOKEN WQ8U-P6MV-AWP7-UZKK.

User: Marcus Christie

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<td>spruce_demo</td>
<td>No description</td>
<td>Tue Nov 14 10:52:58 EST 2006</td>
<td>Tue Nov 14 09:53:00 EST 2006</td>
<td>STARTED</td>
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<td>WAITING</td>
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<td>No description</td>
<td>Mon Nov 13 19:35:50 EST 2006</td>
<td>Mon Nov 13 18:35:51 EST 2006</td>
<td>WAITING</td>
</tr>
<tr>
<td>spruce4</td>
<td>No description</td>
<td>Mon Nov 13 10:56:07 EST 2006</td>
<td>Mon Nov 13 09:56:06 EST 2006</td>
<td>RUNNING</td>
</tr>
<tr>
<td>spruce2</td>
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Screen Shots

Managing Tokens
User Portal

Manage Token...

Login with your token, activate it or add/remove users

User Info...

Login with your email address and DN to check your urgent computing time

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.
Token: ??XB-DV35-P57B-TRJ [look up]

Step 1
Input the token number

Step 2
Activate your token

Step 3
Add users (can be done before activation as well)

Step 4
Submit jobs with elevated priority!

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.
Token: 77XB-DV3S-P578-TRTJ

refresh activate add user

Status: Not yet activated

This is a test token only
Lifetime: 72:00:00
Maximum Urgency: red
Creation date: 2007-10-18 17:15:04.0
Expiration date: 2007-12-12 12:00:00.0

Resources on TG:

- ia32 @ ANL
- ia64 @ ANL
- iear @ PUR
- Fast-CPU @ NCSA
- Fast-IO @ NCSA
- ia64 @ NCSA
- DS-high @ SDSC
- DS-normal @ SDSC
- DS-normal32 @ SDSC
- ondemand @ SDSC
- lonester @ TACC
- frost @ NCAR
Token: 77XB-DV35-P578-TRTJ

refresh activate add user

Status: Not yet activated

Comment:
Screenshots Demo

activate go back

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-lear @ P7R
-Fast-CPU @ NCSA
-Fast-IO @ NCSA
-ia64 @ NCSA
-DS-high @ SDSC
Token: 77XB-DV3S-P578-TRTJ

refresh check time add user

Status: Activated

Real name:
| Demo User
E-mail:
| user@domain.edu
Identity:
| /C=US/O=SDSC/OU=SDSC/CN=Demo User/UID=duser

add cancel

This is a test token only
Lifetime: 72:00:00
Maximum Urgency: red
Creation date: 2007-10-18 17:15:04.0
Expiration date: 2007-12-12 12:00:00.0
Activation date: 2007-10-18 17:16:34.0
Deactivation date: 2007-10-21 17:16:34.0

Resources on TG:
- ia32 @ ANL
- ia64 @ ANL
- jear @ PIR
http://spruce.teragrid.org

Are you sure you want to remove the user?

Cancel  OK

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no
Token: 77XB-DV3S-P578-TRTJ

refresh  check time  add user

Status: Activated


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Maximum Urgency: red
Creation date: 2007-10-18 17:15:04.0
Expiration date: 2007-12-12 12:00:00.0
Activation date: 2007-10-18 17:16:34.0
Deactivation date: 2007-10-21 17:16:34.0

Resources on TG:
- ia32 @ ANL
- ia54 @ ANL
- lcar @ PUR
- Fast-CPU @ NCSA
- Fast-IO @ NCSA
- ia54 @ NCSA
- DS-high @ SDSC
- DS-normal @ SDSC
- DS-normal32 @ SDSC
Email: user@domain.edu
Identity: /C=US/O=SDSC/OU=SDSC/CN=Demo User/UID=user

look up

Step 1
Input your email address and identity

Step 2
Display shows all pertaining token times and resources if any

Step 3
If token is active, submit jobs with elevated priority!

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.
Information for user with
Email: user@domain.edu
Identity: /C=US/O=SDSC/OU=SDSC/CN=Demo User/UID=duser

refresh

The list below shows all the active and not yet activated token permissions for this user. An urgent job can be submitted only if all the resources being requested are on the same token.

- Status: Activated
  Time Remaining: 71:55:05
  This is a TEST token only!
  Maximum Urgency: red

Resources on TG:
- ia32 @ ANL
- ia64 @ ANL
- lear @ PUR
- Fast-CPU @ NCSA
- Fast-I0 @ NCSA
- ia64 @ NCSA
- DS-high @ SDSC
- DS-normal @ SDSC
- DS-normal32 @ SDSC
- ondemand @ SDSC
- lonestar @ TACC
- frost @ NCAR

(User info fresh info as of Thu Oct 18 2007 17:21:22 GMT-0500)
Screen Shots

Admin Views
## Activated Tokens

<table>
<thead>
<tr>
<th>VO</th>
<th>Token</th>
<th>Test</th>
<th>Lifetime</th>
<th>Created</th>
<th>Expiration</th>
<th>Max Auths</th>
<th>Auths Left</th>
<th>Activated</th>
<th>Activation IP</th>
<th>Activation Host</th>
<th>Issued To</th>
<th>Issued By</th>
<th>Admin Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG</td>
<td>NHT8-584A-E5V7-SSS6</td>
<td>Yes</td>
<td>72:00:00</td>
<td>2007-09-26</td>
<td>2007-12-12</td>
<td>infinite</td>
<td>infinite</td>
<td>2007-09-26</td>
<td>09:29:58</td>
<td>128.135.125.142</td>
<td><a href="http://www.ci.uchicago.edu">www.ci.uchicago.edu</a></td>
<td>Suman-HARC-addin</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
</tr>
<tr>
<td>LSU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG/L-ANL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Inactive Tokens

<table>
<thead>
<tr>
<th>VO</th>
<th>Token</th>
<th>Test</th>
<th>Lifetime</th>
<th>Created</th>
<th>Expiration</th>
<th>Max Auths</th>
<th>Issued To</th>
<th>Issued By</th>
<th>Admin Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG</td>
<td>X7D2-NH6U-KS5J-Y5N2</td>
<td>No</td>
<td>48:00:00</td>
<td>2007-06-07</td>
<td>2007-12-12</td>
<td>infinite</td>
<td>VT</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>AEX3-3GH4-SH4U-TV9H</td>
<td>No</td>
<td>48:00:00</td>
<td>2007-06-07</td>
<td>2007-12-12</td>
<td>infinite</td>
<td>VT</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>U282-UVYA-227U-H35N</td>
<td>No</td>
<td>48:00:00</td>
<td>2007-06-07</td>
<td>2007-12-12</td>
<td>infinite</td>
<td>VT</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>684AM-VH4X-5M4C-XT7P</td>
<td>No</td>
<td>48:00:00</td>
<td>2007-06-07</td>
<td>2007-12-12</td>
<td>infinite</td>
<td>VT</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>QY9N-HBLV-WYDB-VLXV</td>
<td>Yes</td>
<td>10:00:00</td>
<td>2007-08-24</td>
<td>2007-12-12</td>
<td>1</td>
<td>Admin portal upgrade</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>LWE5-QMZE-KUND-CS9C</td>
<td>Yes</td>
<td>10:00:00</td>
<td>2007-08-24</td>
<td>2007-12-12</td>
<td>1</td>
<td>Admin portal upgrade</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>4VDK-MZ3R-CM3Z-GLD2</td>
<td>Yes</td>
<td>10:00:00</td>
<td>2007-08-24</td>
<td>2007-12-12</td>
<td>1</td>
<td>Admin portal upgrade</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>4NPQ-8QW7-3HK9-MP2G</td>
<td>Yes</td>
<td>10:00:00</td>
<td>2007-08-24</td>
<td>2007-12-12</td>
<td>1</td>
<td>Admin portal upgrade</td>
<td><a href="mailto:snadella@mcs.anl.gov">snadella@mcs.anl.gov</a></td>
<td></td>
</tr>
</tbody>
</table>
### Token Authentications

Click on the **USER** for User Info  
Click on the **TIMESTAMP** for Request Details  
Click on the **TOKEN** for Token Info

#### TeraGrid [TG]

<table>
<thead>
<tr>
<th>User</th>
<th>Timestamp</th>
<th>Token</th>
<th>IP</th>
<th>Host Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suman Nadella</td>
<td>2007-09-19 12:00:28</td>
<td>DCAQ-TE27-TLW5-PNA8</td>
<td>198.202.114.32</td>
<td>ds001.sdsc.edu</td>
</tr>
<tr>
<td>Suman Nadella</td>
<td>2007-09-04 15:59:02</td>
<td>W7V-V8B86-6Z12-B97C</td>
<td>192.5.198.225</td>
<td>tg-grid1.uc.teragrid.org</td>
</tr>
</tbody>
</table>
Token Authentications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Token</td>
<td>9GRy-STJH-RK3M-SQRK</td>
</tr>
<tr>
<td>Status</td>
<td>Deactivated</td>
</tr>
<tr>
<td>Test</td>
<td>Yes</td>
</tr>
<tr>
<td>Lifetime</td>
<td>72:00:00</td>
</tr>
<tr>
<td>Created</td>
<td>2007-07-16</td>
</tr>
<tr>
<td>Expiration</td>
<td>2007-12-12</td>
</tr>
<tr>
<td>MaxAuths</td>
<td>0</td>
</tr>
<tr>
<td>RemAuths</td>
<td>0</td>
</tr>
<tr>
<td>Issued to</td>
<td>SDSC rocks cluster test</td>
</tr>
<tr>
<td>Issued by</td>
<td>Suman Nadella</td>
</tr>
<tr>
<td>Urgency</td>
<td>red</td>
</tr>
<tr>
<td>Org</td>
<td>TG</td>
</tr>
</tbody>
</table>

Site Resources

<table>
<thead>
<tr>
<th>Site</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego Supercomputer Center [SDSC]</td>
<td>ondemand</td>
</tr>
</tbody>
</table>

Authentication History

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>User</th>
<th>IP (hostname)</th>
<th>SiteName</th>
<th>Resource</th>
<th>Urgency</th>
</tr>
</thead>
</table>
**SPRUCE**
Special PRIORITY and Urgent Computing Environment

Admin Home
My Account

Manage Admins
Add Token
Add Resource

Token Info
Auths
Failed Auths
Resources
Users

Site Statistics
Spruce Home
User Portal
Log Out

---

**Add Token**

- **Lifetime**
  - [hh:mm:ss]
  - min: 01:00:00
  - max: 72:00:00

- **Expiration**
  - [yyyy-mm-dd hh:mm:ss]
  - min: three days in the future

- **Issued To**
  - [max 255]

- **Maximum Urgency**
  - [yellow]

- **Number of permissible authentications**
  - [Must be a positive integer or * for infinite]

- **Test Token?**
  - [No]

---

**Token Permissions**

<table>
<thead>
<tr>
<th>Site</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANL</td>
<td>ia64</td>
</tr>
<tr>
<td></td>
<td>ia32</td>
</tr>
<tr>
<td>PUR</td>
<td>lcar</td>
</tr>
<tr>
<td>NCSA</td>
<td>ia64</td>
</tr>
<tr>
<td></td>
<td>Fast-I0</td>
</tr>
<tr>
<td></td>
<td>Fast-CPU</td>
</tr>
<tr>
<td>SDSC</td>
<td>DS-normal</td>
</tr>
<tr>
<td></td>
<td>DS-normal32</td>
</tr>
<tr>
<td></td>
<td>DS-high</td>
</tr>
<tr>
<td>TACC</td>
<td>lonestar</td>
</tr>
<tr>
<td>NCAR</td>
<td>frost</td>
</tr>
</tbody>
</table>

---

* Activation Email Contacts (comma separated)
Note that the spruce-dev email address will be added by default.

---

**Special PRIORITY and Urgent Computing Environment :: A TeraGrid Science Gateway Project**
Enter Advisor Parameters

Enter a deadline [hh:mm:ss] 10:00:00
Select a SPRUCE token urgency Yellow
Select a workflow/application LEAD-workflow 1

Requested Workflow Summary:

<table>
<thead>
<tr>
<th>Project</th>
<th>Workflow</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD</td>
<td>workflow 1</td>
<td>LEAD 1 workflow description</td>
</tr>
</tbody>
</table>

Warm Standby Resources

<table>
<thead>
<tr>
<th>Site</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argonne National Laboratory</td>
<td>ia64-compute</td>
</tr>
</tbody>
</table>

Workflow Parameters

Please enter a value for each parameter. In order to calculate the cubic spline performance interpolation, you must enter a value that is within the range [min, max]

<table>
<thead>
<tr>
<th>Name</th>
<th>min</th>
<th>max</th>
<th>input</th>
</tr>
</thead>
<tbody>
<tr>
<td>grid_points</td>
<td>2500</td>
<td>99882</td>
<td>25000</td>
</tr>
<tr>
<td>duration</td>
<td>10800</td>
<td>43200</td>
<td>25000</td>
</tr>
</tbody>
</table>

Get Advice!
### Advisor Results:

**Advisor Inputs:**

- **Deadline:** 10:00:00
- **Workflow:** 1
- **Maximum Urgency:** yellow

**Workflow Parameters:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>grid_points</td>
<td>25000</td>
</tr>
<tr>
<td>duration</td>
<td>25000</td>
</tr>
</tbody>
</table>

**Predicted Turnaround Times that meet the deadline:**

<table>
<thead>
<tr>
<th>Time Bound</th>
<th>Quantile</th>
<th>Resource</th>
<th>Urgency</th>
<th>Policy</th>
<th>CPUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:43:20</td>
<td>0.857</td>
<td>mercury@NCSA</td>
<td>orange</td>
<td>next-to-run</td>
<td>32</td>
</tr>
<tr>
<td>08:41:40</td>
<td>0.857</td>
<td>mercury@NCSA</td>
<td>yellow</td>
<td>elevated priority</td>
<td>32</td>
</tr>
<tr>
<td>09:28:20</td>
<td>0.857</td>
<td>big-red@Indiana</td>
<td>orange</td>
<td>next-to-run</td>
<td>32</td>
</tr>
<tr>
<td>09:53:20</td>
<td>0.857</td>
<td>big-red@Indiana</td>
<td>yellow</td>
<td>elevated priority</td>
<td>32</td>
</tr>
</tbody>
</table>

**Predicted Turnaround Times that exceed the deadline:**

<table>
<thead>
<tr>
<th>Time Bound</th>
<th>Quantile</th>
<th>Resource</th>
<th>Urgency</th>
<th>Policy</th>
<th>CPUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:13:20</td>
<td>0.857</td>
<td>mercury@NCSA</td>
<td>none</td>
<td>normal</td>
<td>32</td>
</tr>
</tbody>
</table>
Screen Shots

SPRUCE Bandwidth
Token: WN3E-ER7U-6UUW-FJCE

**Status:** Not yet activated
**Lifetime:** 72:00:00
**Creation date:** 2007-11-01 09:51:37.0
**Expiration date:** 2007-12-31 00:00:00.0

**Bandwidth Properties**
Accessible VLANS: (Activate token for manipulation options)
- 446 activation log

**Compute Properties**
This is a test token only
Maximum Urgency: yellow

Resources on TG:
- ia32 @ ANL
- ia64 @ ANL

Users: there are no users assigned to this token.

(Token info fresh as of Thu Nov 15 2007 08:11:30 GMT-0800)

*If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.*
<table>
<thead>
<tr>
<th>INDEX</th>
<th>START</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tue Nov 6 21:41:13 2007</td>
<td>1 minute and 54 seconds</td>
</tr>
<tr>
<td>2</td>
<td>Thu Nov 1 14:28:42 2007</td>
<td>49 seconds</td>
</tr>
<tr>
<td>3</td>
<td>Thu Nov 1 14:26:01 2007</td>
<td>1 minute</td>
</tr>
<tr>
<td>4</td>
<td>Thu Nov 1 05:01:43 2007</td>
<td>1 minute and 3 seconds</td>
</tr>
<tr>
<td>5</td>
<td>Thu Nov 1 03:05:18 2007</td>
<td>1 minute and 28 seconds</td>
</tr>
<tr>
<td>6</td>
<td>Thu Nov 1 02:26:49 2007</td>
<td>1 minute and 19 seconds</td>
</tr>
<tr>
<td>7</td>
<td>Thu Nov 1 00:49:36 2007</td>
<td>54 seconds</td>
</tr>
<tr>
<td>8</td>
<td>Thu Nov 1 00:39:12 2007</td>
<td>5 minutes and 57 seconds</td>
</tr>
<tr>
<td>9</td>
<td>Thu Nov 1 00:35:42 2007</td>
<td>30 seconds</td>
</tr>
<tr>
<td>10</td>
<td>Thu Nov 1 00:33:51 2007</td>
<td>31 seconds</td>
</tr>
<tr>
<td>11</td>
<td>Thu Nov 1 00:32:08 2007</td>
<td>34 seconds</td>
</tr>
<tr>
<td>12</td>
<td>Thu Nov 1 00:29:51 2007</td>
<td>31 seconds</td>
</tr>
<tr>
<td>13</td>
<td>Thu Nov 1 00:28:42 2007</td>
<td>31 seconds</td>
</tr>
<tr>
<td>14</td>
<td>Wed Oct 31 23:56:16 2007</td>
<td>30 minutes and 42 seconds</td>
</tr>
<tr>
<td>16</td>
<td>Wed Oct 31 23:46:41 2007</td>
<td>1 minute and 11 seconds</td>
</tr>
<tr>
<td>17</td>
<td>Wed Oct 31 22:07:58 2007</td>
<td>1 hour</td>
</tr>
</tbody>
</table>
Fetching information...
Token: WN3E-ER7U-6UUW-FJCE

Status: Activated
Lifetime: 72:00:00
Creation date: 2007-11-01 09:51:37.0
Expiration date: 2007-12-31 00:00:00.0
Activation date: 2007-11-15 10:12:20.0
Deactivation date: 2007-11-18 10:12:20.0

Bandwidth Properties
Accessible VLANS:

Compute Properties
This is a test token only
Maximum Urgency: yellow

Resources on TG:
- ia32 @ ANL
- ia64 @ ANL

Users: there are no users assigned to this token.
(Token info fresh as of Thu Nov 15 2007 08:12:20 GMT-0600)

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.
Token: WN3E-ER7U-6UUW-FJCE

Status: Activated
Lifetime: 72:00:00
Creation date: 2007-11-01 09:51:37.0
Expiration date: 2007-12-31 00:00:00.0
Activation date: 2007-11-15 10:12:20.0
Deactivation date: 2007-11-18 10:12:20.0

Bandwidth Properties
Accessible VLANS:
- 446 activate deactivate activation log

Compute Properties
This is a test token only
Maximum Urgency: yellow

Resources on TG:
- ia32 @ ANL
- ia64 @ ANL

Users: there are no users assigned to this token.
(Token info fresh as of Thu Nov 15 2007 08:13:17 GMT-0800)

If you need to go back to the menu, press the User Portal link from the menu. Browser BACK button has no functionality.