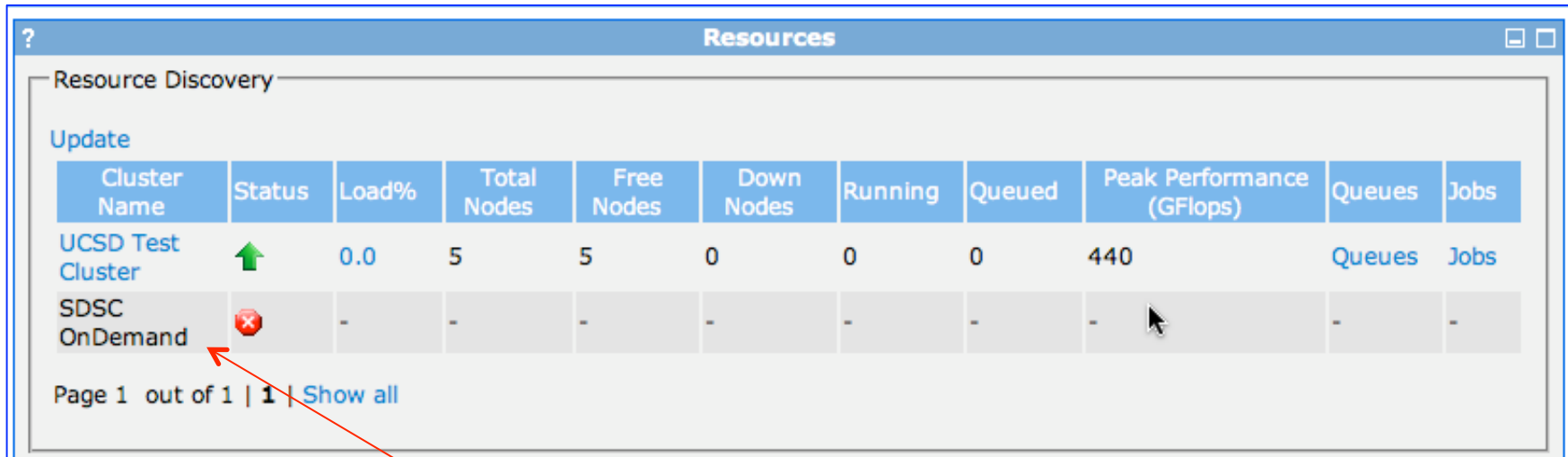# Inca User-level Grid Monitoring

Shava Smallen

ssmallen@sdsc.edu

Things fail …

Cluster Name	Status	Load%	Total Nodes	Free Nodes	Down Nodes	Running	Queued	Peak Performance (GFlops)	Queues	Jobs
UCSD Test Cluster	⬆	0.0	5	5	0	0	0	440	Queues	Jobs
SDSC OnDemand	❌	-	-	-	-	-	-	-	-	-

Resources

Resource Discovery

Update

Page 1 out of 1 | 1 | Show all

For example,

- Resource does not display in portal (MDS not running)
- Cannot submit job (WS-GRAM not running)

Distributed System: *"You know you have one when the crash of a computer you've never heard of stops you from, getting any work done."*
-Leslie Lamport

SDSC

inca

Goal: reliable grid software and services for users

- Grids provide unified access to resources that advance scientific exploration

- Unfortunately, complex to deploy and maintain

- Detect and analyze failures
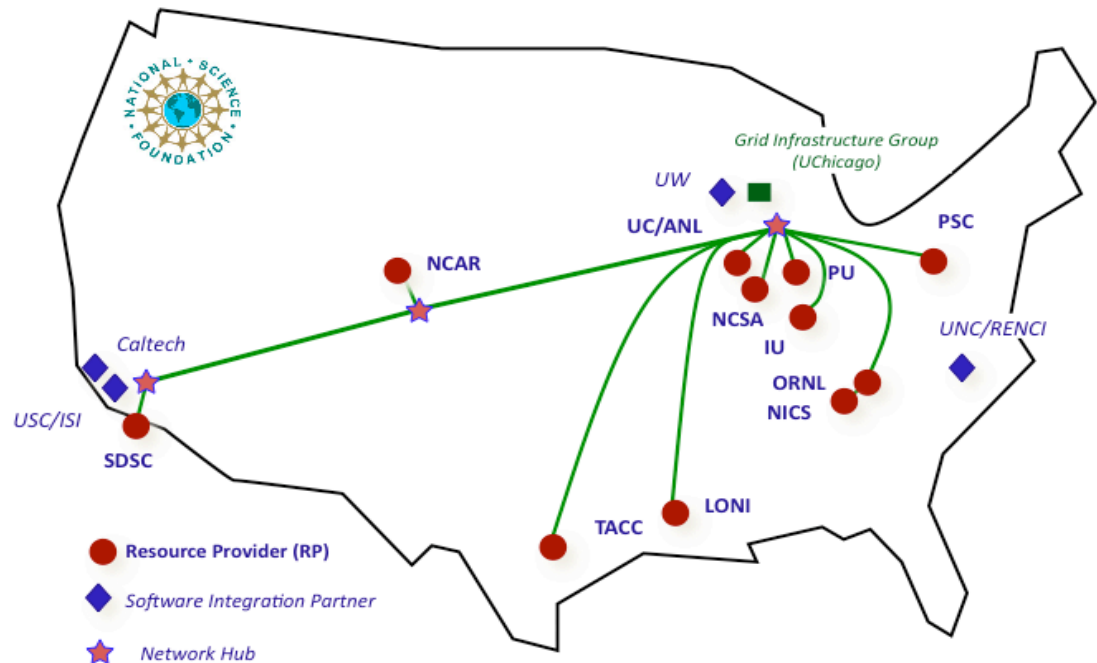
1+ PFlop compute power,
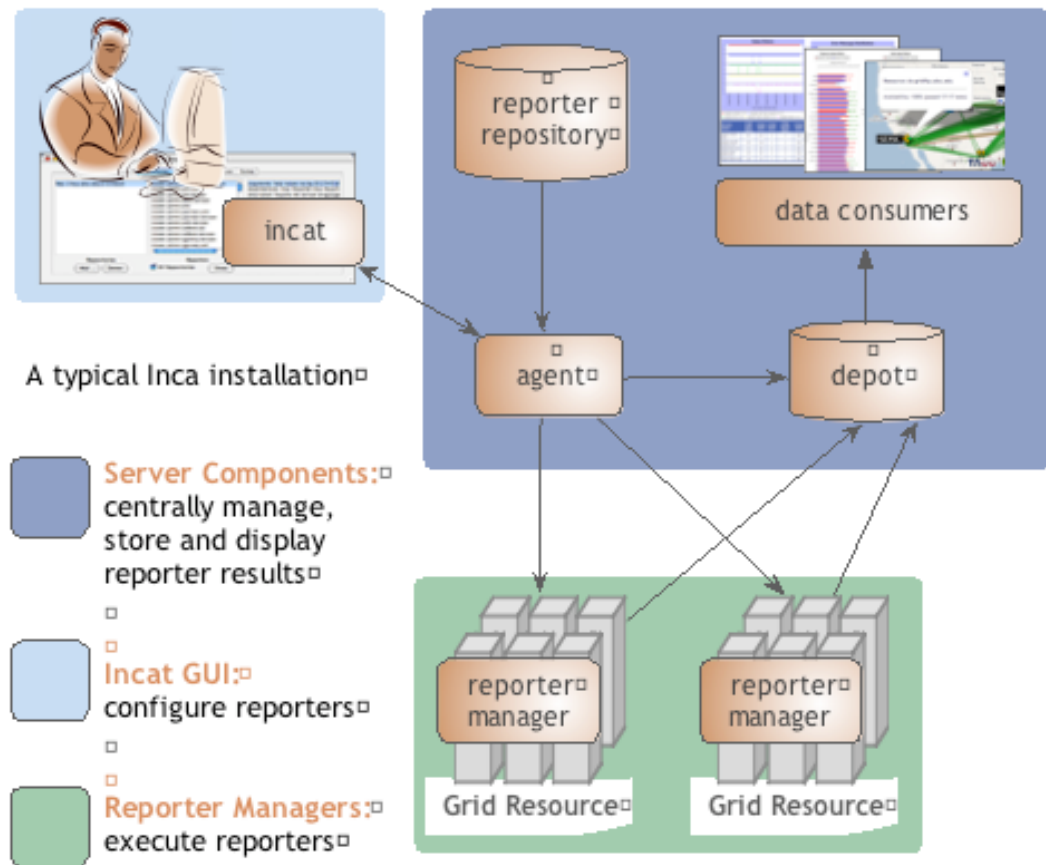*30+ PB of online and archival data storage,*
multi-Gpbs links

Who benefits from grid monitoring?

- **Grid managers**
  - Verify requirements are fulfilled by resource providers
  - Identify failure trends

- **System administrators**
  - Email notification
  - Debugging support

- **End users**
  - Higher availability
  - Debug user account/ environment issues

**SDSC** SAN DIEGO SUPERCOMPUTER CENTER
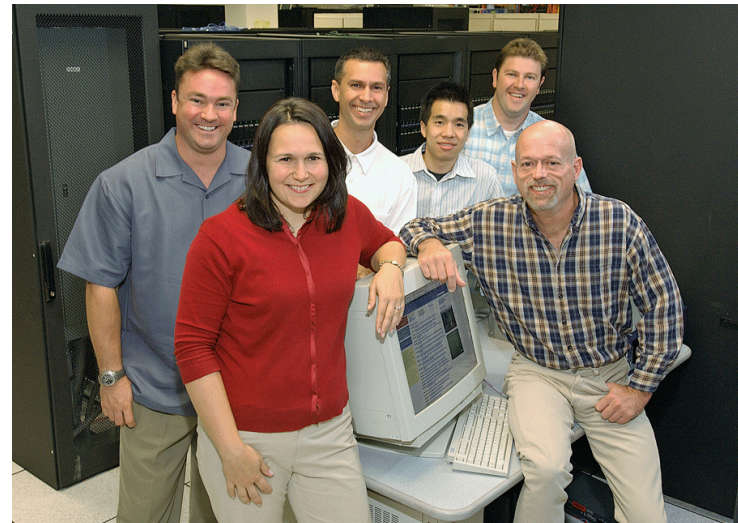
inca

Inca provides user-level grid monitoring

- Enables consistent user-level testing across resources

- Easy to configure and maintain

- Easy to collect data from resource

- Archived results support troubleshooting

- Large variety of tests

- Comprehensive views of data

A typical Inca installation

Server Components: centrally manage, store and display reporter results

Incat GUI: configure reporters

Reporter Managers: execute reporters

reporter repository

data consumers

incat

agent

depot

reporter manager

reporter manager

Grid Resource   Grid Resource

Reporters collect monitoring data

- Executable programs that measure some aspect of the system or installed software

- Supports a set of command-line options and writes XML to stdout

- Schema supports multiple types of data

- Extensive library support for perl and python scripts (most reporters < 30 lines of code)
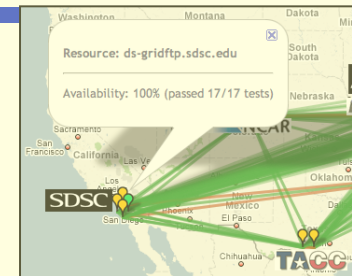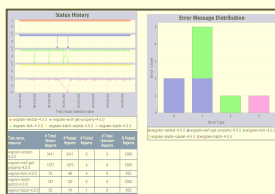
- Independent of other Inca components

SAN DIEGO SUPERCOMPUTER CENTER
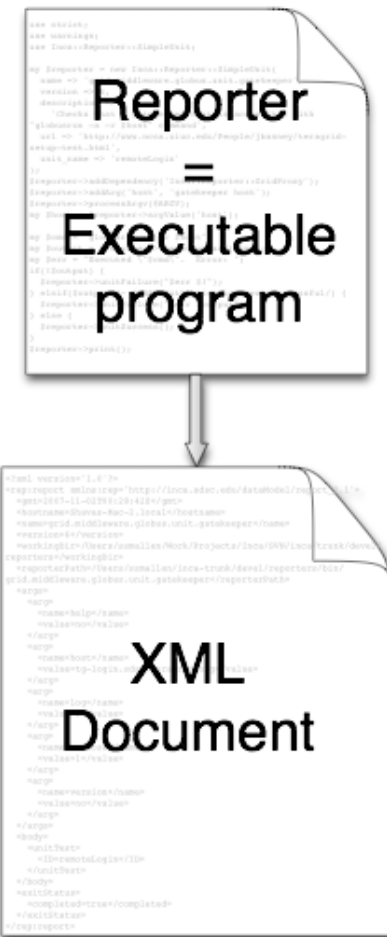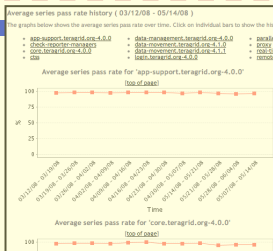
Tests Summary

Resource status history
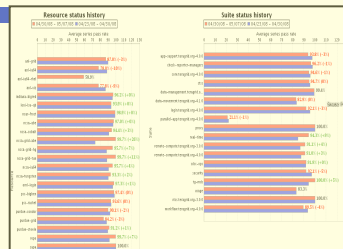
Weekly status report

Cumulative test status by resource

Error history summary

Average series pass rate for 'data-movement.teragrid.org-4.1.0'

[top of page]

Related test histories

Test status by package and resource
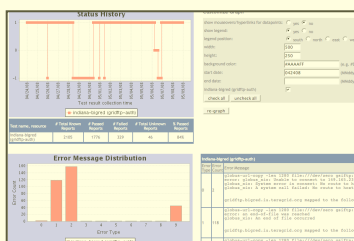
Individual test history

Individual test result details

Test Details

Historical

SAN DIEGO SUPERCOMPUTER CENTER

Current status
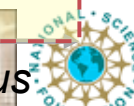
Inca TeraGrid deployment

- Running since 2003

- Total of 2 tests running on 20 login nodes, 3 grid nodes, and 3 servers

- Coordinated software and services

- Cross-site tests

- GRAM usage

- CA certificate and CRL checking

- Resource registration in information services
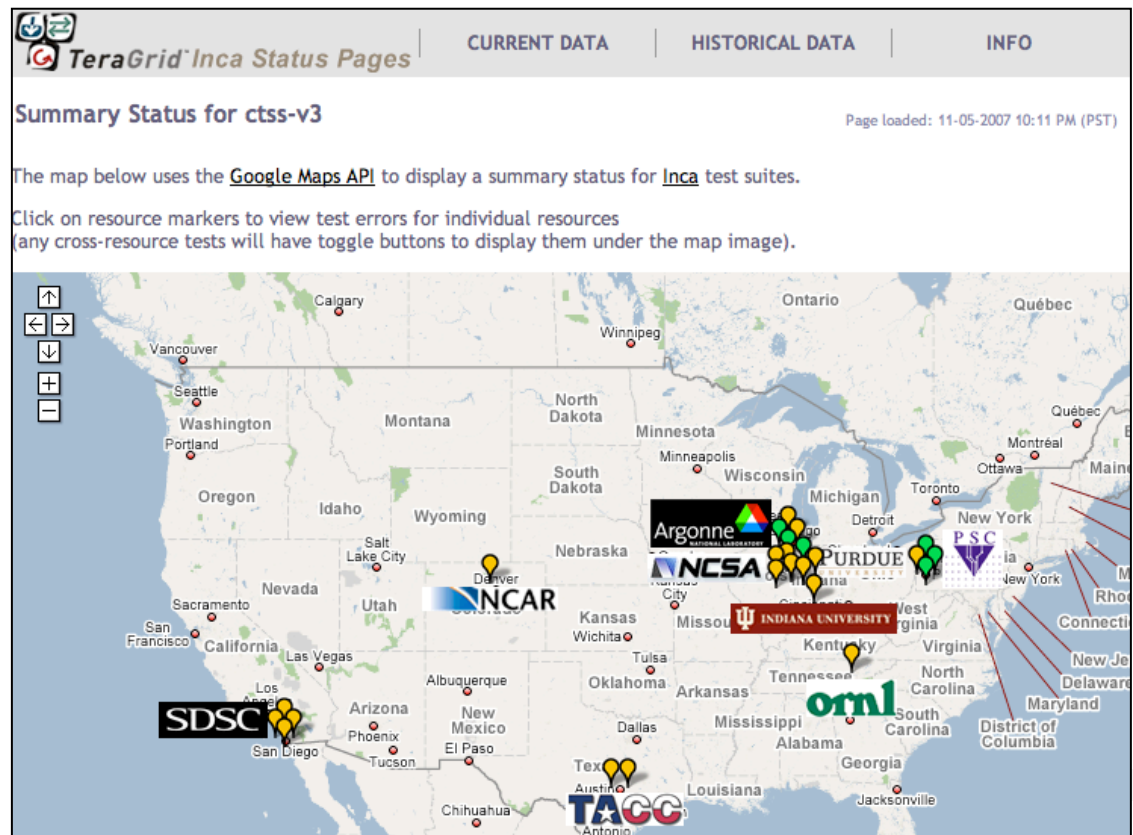
Screenshot of Inca status pages for TeraGrid

http://inca.teragrid.org/

Inca GEON deployment

- Running since Feb 2008

- Total of 206 tests running on 5 login nodes and 6 servers

- LiDAR workflow services

- Web servers

- Ssh connectivity

- Base system information (Rocks, Gcc, Java, etc.)

Screenshot of Inca status map for GEON

http://inca-geon.sdsc.edu

Monitoring UCSD's campus portal

- At first glance: (remote tests)

  - Tomcat/Gridsphere

  - MyProxy

  - MDS

  - WS-GRAM

CampusPortal

- grid.ucsd.edu_homePage
- grid-test.ucsd.edu_homePage
- myproxyPing

	ucsd-portal
grid.ucsd.edu_homePage	pass
grid-test.ucsd.edu_homePage	pass
myproxyPing	pass

Appliance

- rocks-131.sdsc.edu_mdsInfo
- rocks-131.sdsc.edu_wsgram
- rocks-160.sdsc.edu_mdsInfo
- rocks-160.sdsc.edu_wsgram

	ucsd-portal
rocks-131.sdsc.edu_mdsInfo	pass
rocks-131.sdsc.edu_wsgram	pass
rocks-160.sdsc.edu_mdsInfo	pass
rocks-160.sdsc.edu_wsgram	pass

SDSC **SAN DIEGO SUPERCOMPUTER CENTER**

inca

Discussion: possibilities for expanding monitoring

- What other services should be monitored?

- Expand to more campuses?

Inca Information

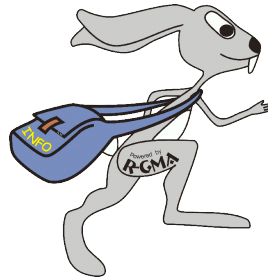- Announcements:
  inca-users@sdsc.edu

- Email:
  inca@sdsc.edu

- Website:
  http://inca.sdsc.edu

- Supported by:

Related Grid monitoring tools

Inca's primary objective: user-level Grid monitoring