

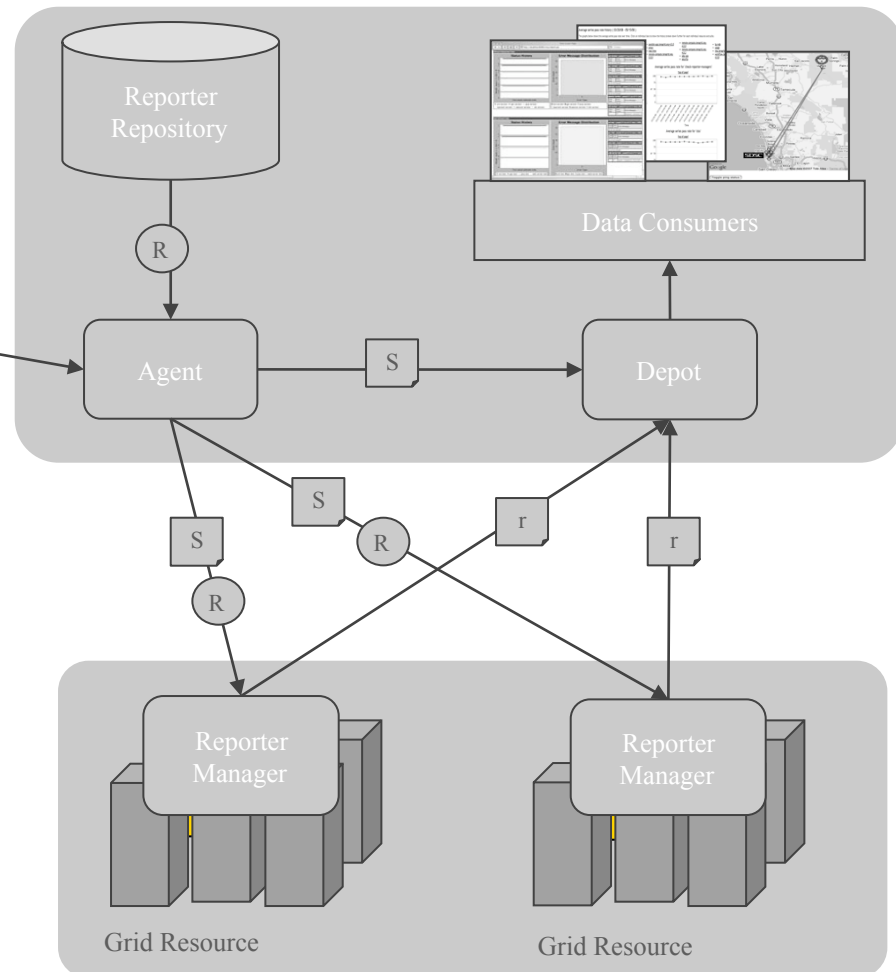
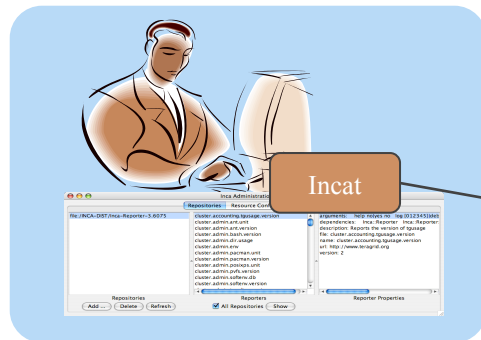
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# Administering Inca with incat

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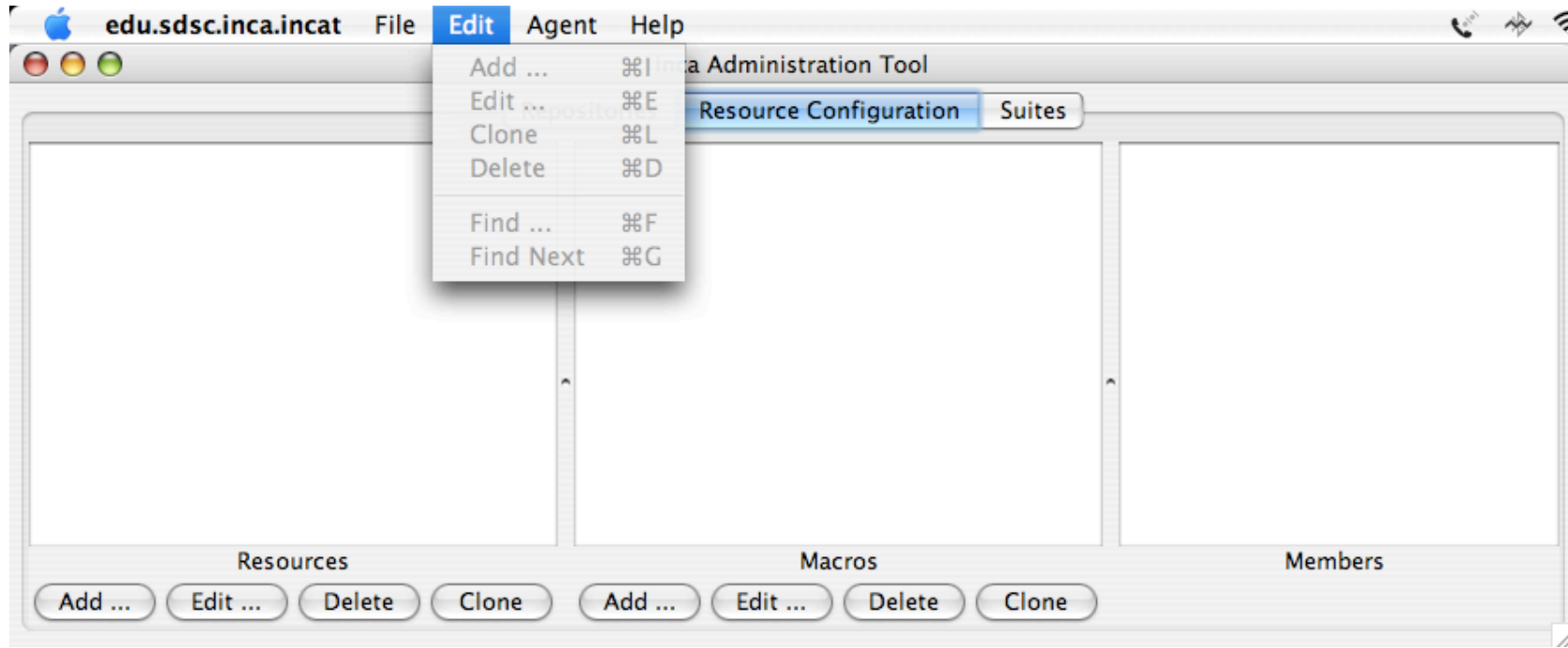
Inca Workshop  
August 26, 2010

# incat



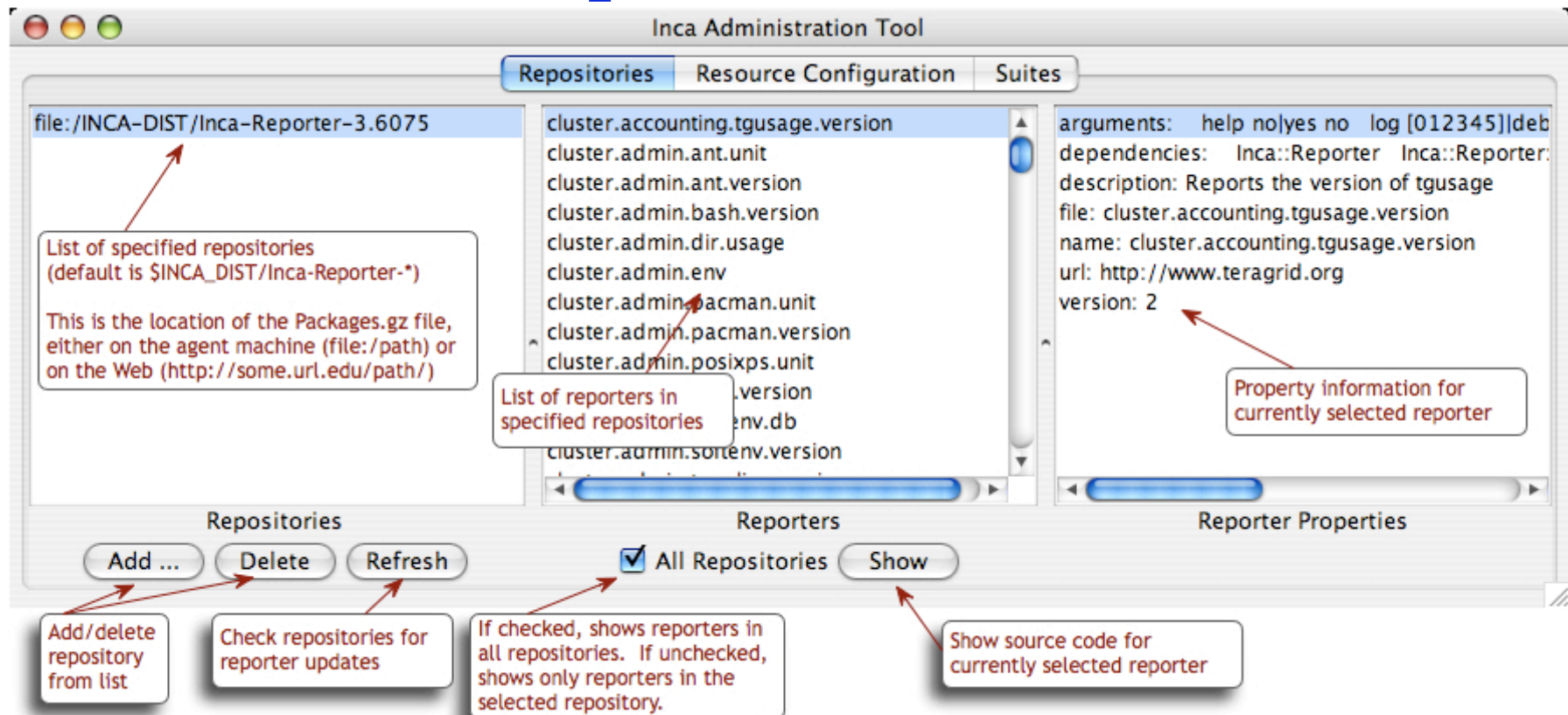
- A graphic editor for an Inca deployment configuration (XML describing repositories, resources, and series)
- Retrieves existing configuration from Agent and/or loads specified file

# incat Display



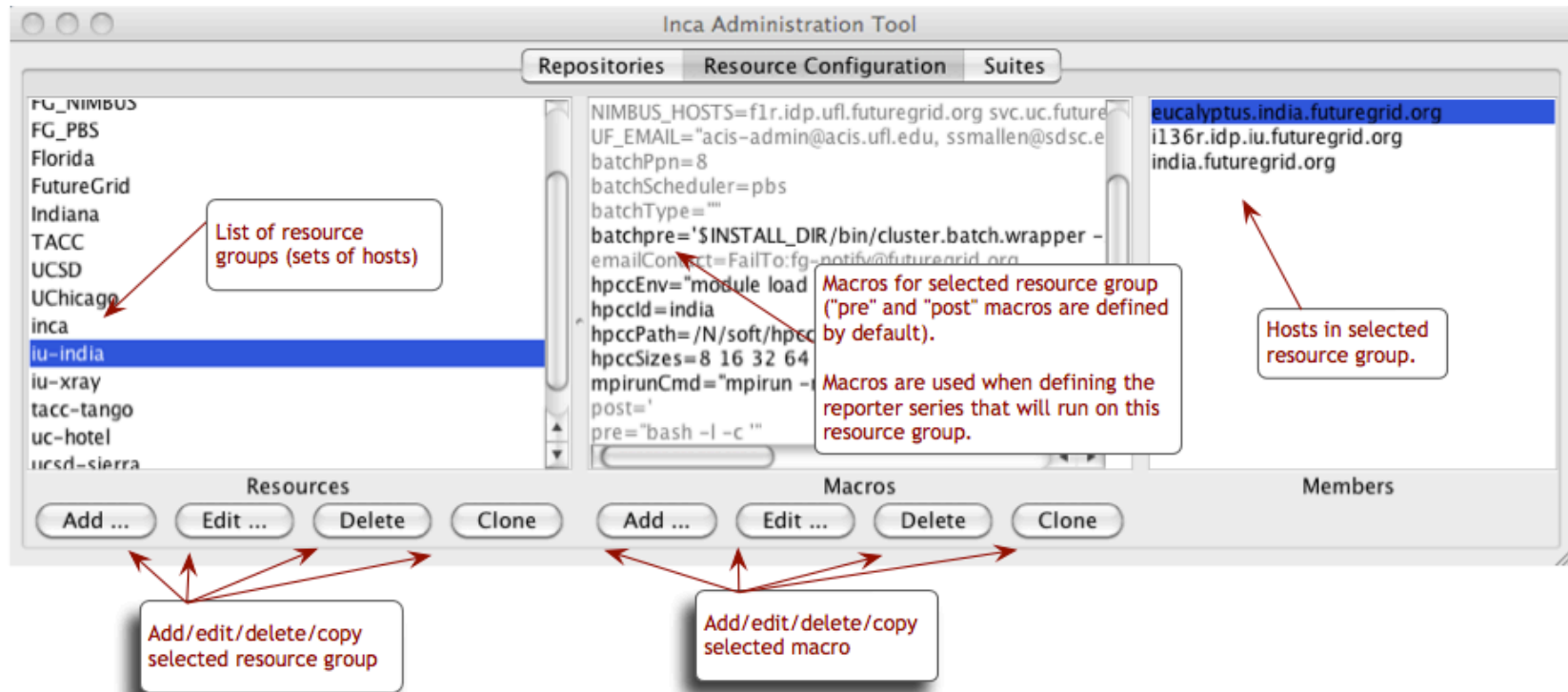
- Tabs for repositories, resources, and suites
- File Open/Save/Save As menu
- Edit menu supports modifying and searching selected panel
- Agent/Commit sends Inca deployment configuration to Agent
- Online user's guide via Help menu

# Repositories Tab



- Repository list, reporter collection, catalog entry
- Reporter information retrieved from connected Agent

# Resource Configuration Tab



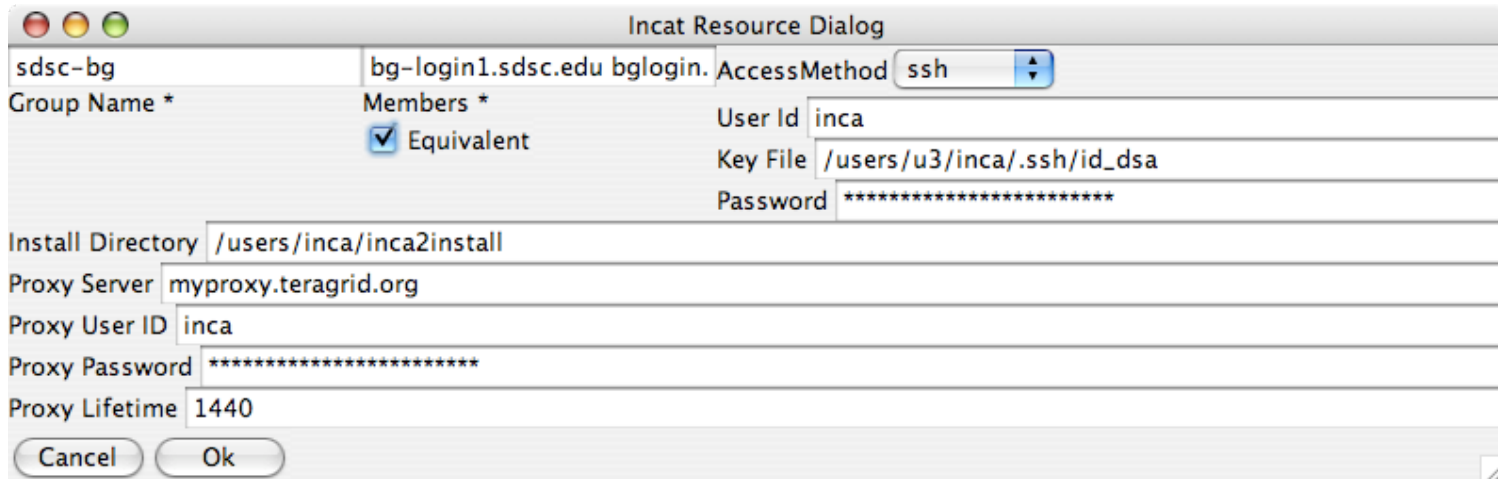
- Resource name, associated macros, member hosts
- Inherited macros shown in gray
- Hosts with no IP address shown in red
- Resource “Add ...”, “Edit ...” open resource edit dialog

# Resource Edit Dialog

The screenshot shows the 'Incat Resource Dialog' window. It contains the following fields and controls:

- Group Name \***: A text field containing 'localResource'. A callout points to it with the text: 'Arbitrary nickname for the resource group.'
- Members \***: A text field containing 'client64-52.sdsc.edu'. A callout points to it with the text: 'Hostnames or other resource groups that are in this resource group.'
- AccessMethod**: A dropdown menu showing 'local'. A callout points to it with the text: 'Method the Agent uses to contact the Reporter Manager(s) in this group. Local, Globus2, Globus4, SSH, Manual'.
- Equivalent**: A checked checkbox. A callout points to it with the text: 'If checked, Inca will treat the hosts in this group as a single host, only running the reporters on one of them.'
- Install Directory**: A text field. A callout points to it with the text: 'Directory where the Reporter Manager is installed. If blank, the Reporter Manager will be installed in ~/incaReporterManager'.
- Approval Email**: A text field.
- Proxy Server**: A text field. A callout points to it with the text: 'Proxy information for Agent access to Globus resources and for reporters that require a proxy'.
- Proxy User ID**: A text field.
- Proxy Password**: A text field.
- Proxy Lifetime**: A text field.
- Buttons**: 'Cancel' and 'Ok' buttons. A callout points to the 'Ok' button with the text: 'Resource administrator approves all changes'.

# Specifying Ssh Resources



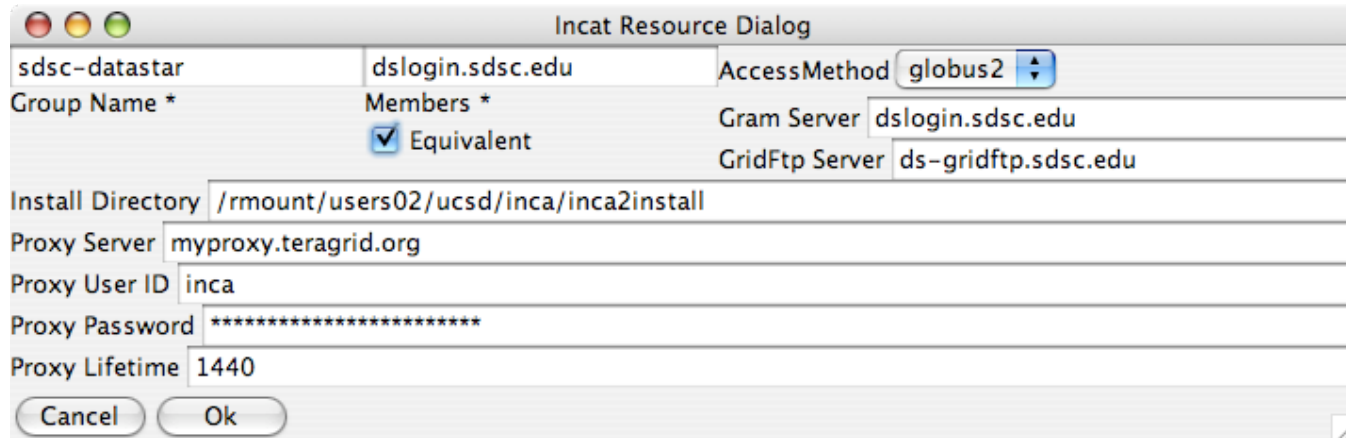
The screenshot shows a window titled "Incat Resource Dialog" with the following fields and values:

sdsc-bg	bg-login1.sdsc.edu bglogin.	AccessMethod	ssh
Group Name *	Members *	User Id	inca
	<input checked="" type="checkbox"/> Equivalent	Key File	/users/u3/inca/.ssh/id_dsa
		Password	*****
Install Directory	/users/inca/inca2install		
Proxy Server	myproxy.teragrid.org		
Proxy User ID	inca		
Proxy Password	*****		
Proxy Lifetime	1440		

At the bottom are "Cancel" and "Ok" buttons.

- Accessed by Agent using j2ssh classes
- Reporter Manager staging via sftp
- Passwords stored/transmitted encrypted

# Specifying Globus Resources



The screenshot shows the 'Incat Resource Dialog' window. It contains the following fields and values:

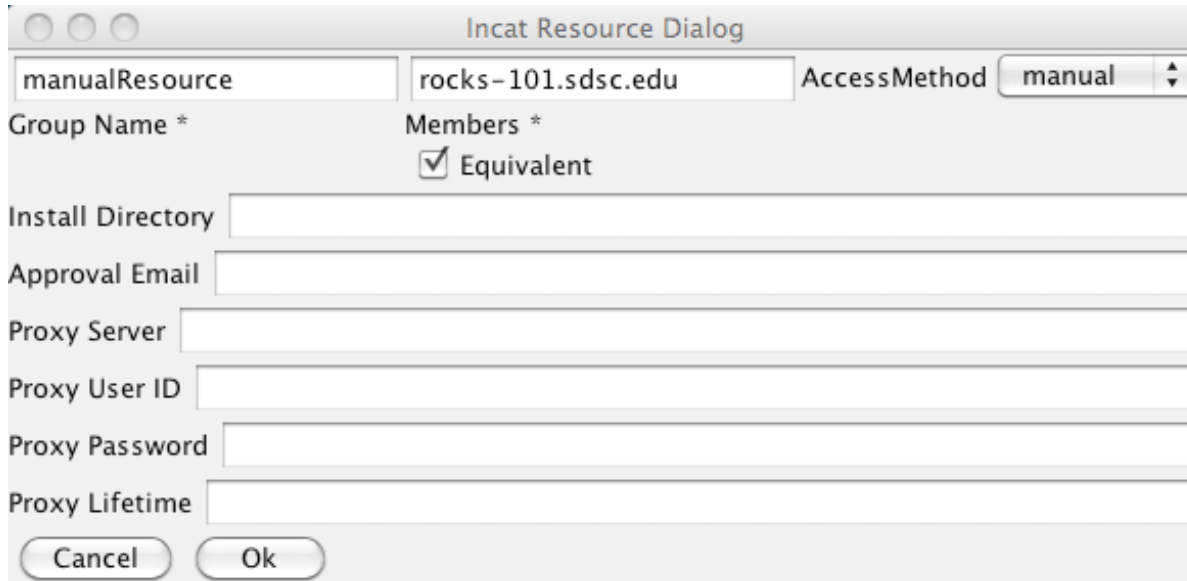
sdsc-datastar	dslogin.sdsc.edu	AccessMethod	globus2
Group Name *	Members *	Gram Server	dslogin.sdsc.edu
	<input checked="" type="checkbox"/> Equivalent	GridFtp Server	ds-gridftp.sdsc.edu
Install Directory	/rmount/users02/ucsd/inca/inca2install		
Proxy Server	myproxy.teragrid.org		
Proxy User ID	inca		
Proxy Password	*****		
Proxy Lifetime	1440		

At the bottom are 'Cancel' and 'Ok' buttons.

- Accessed by Agent via Globus CoG Java classes
- Globus2 uses pre-WS APIs and Globus4 uses WS APIs
- Reporter Manager staged via GridFtp



# Specifying Manual Resources

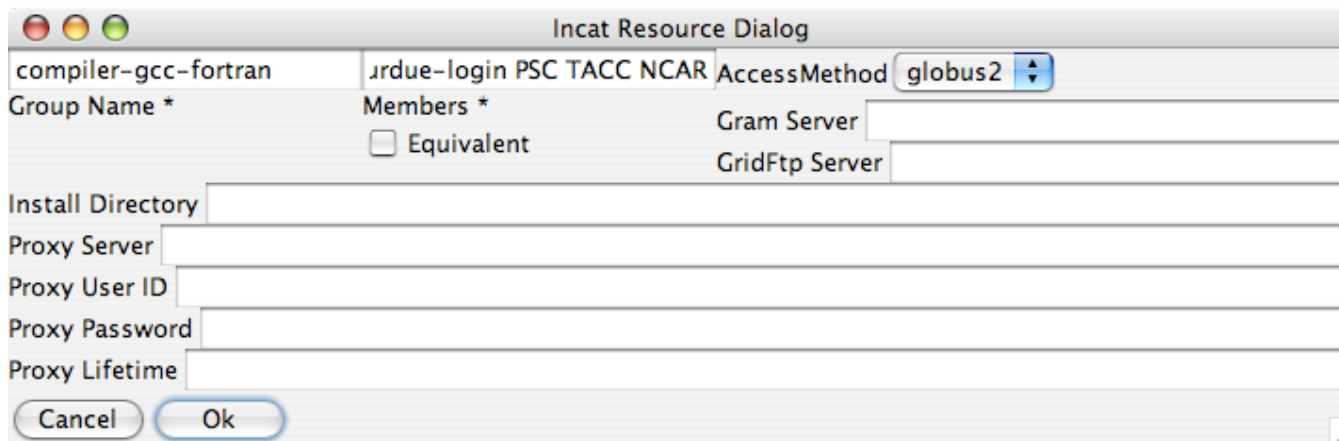


The screenshot shows a window titled "Incat Resource Dialog". It contains the following fields and controls:

- Group Name \***: A text field containing "manualResource".
- Members \***: A text field containing "rocks-101.sdsc.edu".
- AccessMethod**: A dropdown menu set to "manual".
- Equivalent**: A checked checkbox.
- Install Directory**: An empty text field.
- Approval Email**: An empty text field.
- Proxy Server**: An empty text field.
- Proxy User ID**: An empty text field.
- Proxy Password**: An empty text field.
- Proxy Lifetime**: An empty text field.
- Buttons**: "Cancel" and "Ok" buttons at the bottom.

- Agent cannot use provided automated methods
- Resource administrator installs reporter manager manually and connects it to the agent

# Grouping Resources

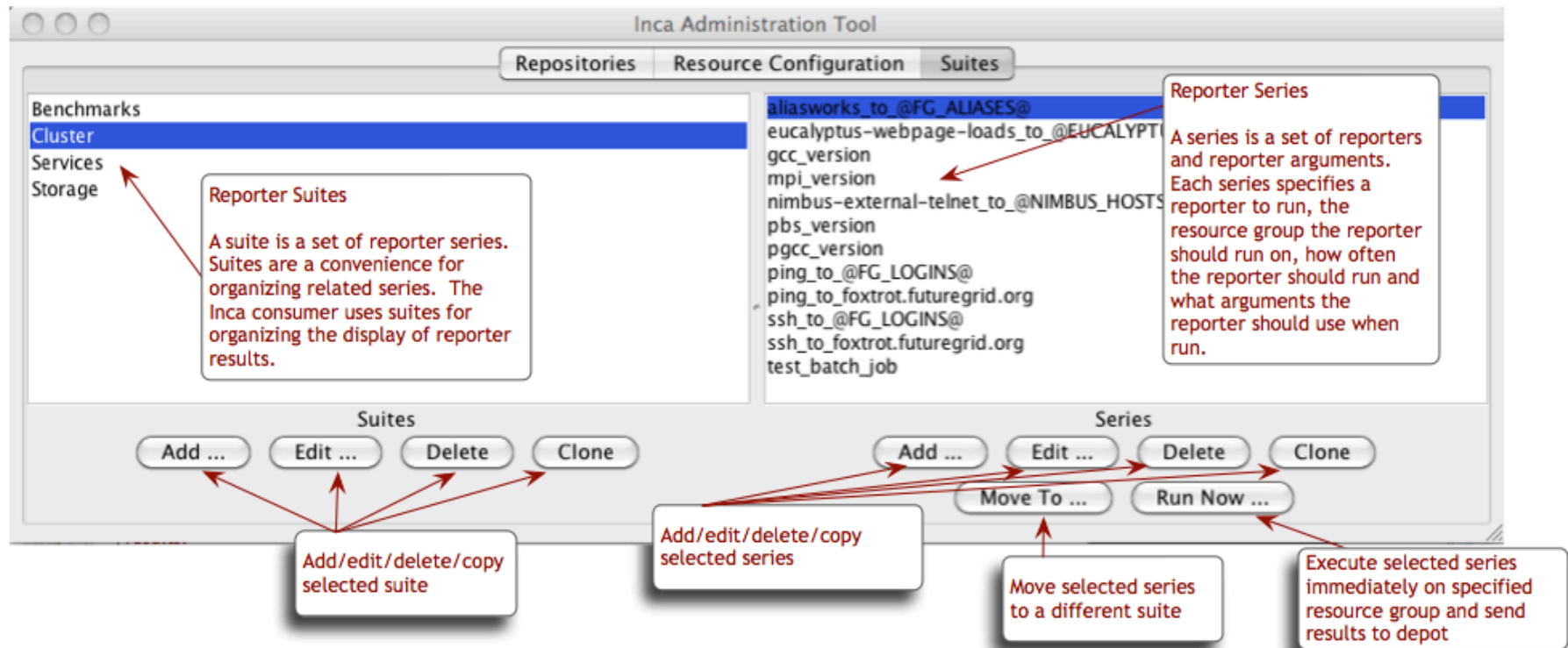


The screenshot shows a window titled "Incat Resource Dialog". It contains several input fields and a checkbox. The "Group Name \*" field is filled with "compiler-gcc-fortran". The "Members \*" field is filled with "jrdue-login PSC TACC NCAR". The "AccessMethod" dropdown menu is set to "globus2". There are empty fields for "Gram Server" and "GridFtp Server". Below these are fields for "Install Directory", "Proxy Server", "Proxy User ID", "Proxy Password", and "Proxy Lifetime". At the bottom are "Cancel" and "Ok" buttons.

compiler-gcc-fortran	jrdue-login PSC TACC NCAR	AccessMethod	globus2
Group Name *	Members *	Gram Server	
	<input type="checkbox"/> Equivalent	GridFtp Server	
Install Directory			
Proxy Server			
Proxy User ID			
Proxy Password			
Proxy Lifetime			

- Convenience for specifying series to run on multiple resources
- Directory, proxy info, etc. are like macros--most specific value is used for each host

# Suites Tab



- Grouping of series into suites allows clearer Consumer display
- Report series named after reporter or given “nickname”

# Series Edit Dialog

Incat Series Dialog

Reporter \*

Resource \*

☐ Use Version 1 Only ☒ Use Latest Version  
(Reports whether a service is accessible via http)

Run Every 1 hours From 0 \*\*\*\*\*

Nickname @info\_service\_hosts@:80 (Apache)

Context /bin/bash -l -c'*grid.middleware.globus.unit.httpmds* -args'

Limits CPU (Secs) Wall (Secs) @maxWallTime@ Memory (MB)

Comparison errorMessage == " || errorMessage =~ 'Inca error'

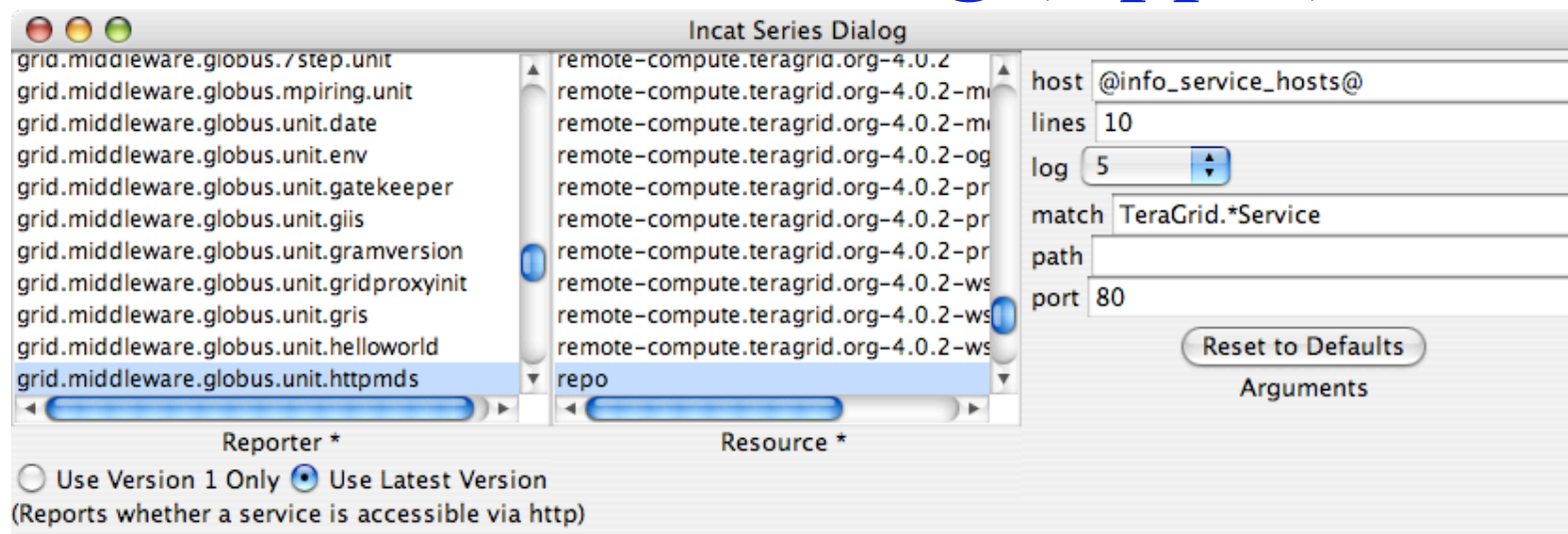
Notification Script EmailNotifier

Script Arguments inca@sdsd.edu

Cancel Ok

Reset to Defaults Arguments

# Series Edit Dialog (Upper)



- Select reporter and resource; specify command-line arg values
- Argument list determined by reporter
- Use latest version automates Reporter updates
- Reporter description appears below reporter

# Series Edit Dialog (Lower)

Run Every 1 hours From 0 ? \* \* \* \*

Nickname @info\_service\_hosts@:80 (Apache)

Context /bin/bash -l -c'grid.middleware.globus.unit.httpmds -args'

Limits CPU (Secs) Wall (Secs) @maxWallTime@ Memory (MB)

Comparison errorMessage == " || errorMessage =~ 'Inca error'

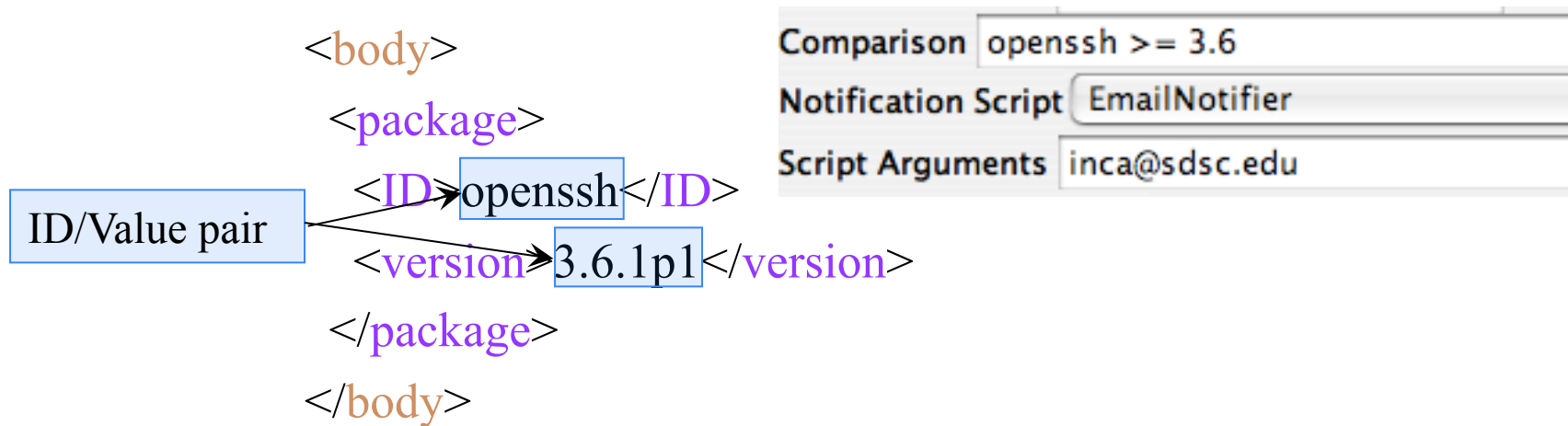
Notification Script EmailNotifier

Script Arguments inca@sdsc.edu

Cancel Ok

- Run frequency uses extended cron syntax
- Nickname useful in later report display--should be unique
- Context allows specialized execution
- Reporter killed and error report stored if limits exceeded
- Comparison allows more precise definition of reporter success/failure
- Notification script run when state changes

# Comparisons Refine Success and Failure



- Comparison can test body, errorMessage, ID values from report body
- Supports comparison operators and pattern matching
- EmailNotifier, LogNotifier provided; custom notifiers supported
- EmailNotifier reports success, failure, or both



# Using Macros in Report Series

The screenshot shows the Inca Administration Tool interface. The 'Resource Configuration' tab is active, displaying a list of resources on the left and configuration details on the right. The 'Incat Series Dialog' is open, showing the configuration for a specific series. Red boxes highlight macro references in the configuration fields:

- `info_service_hosts=info1.dyn.teragrid.org info2.dyn`
- `maxMan=1`
- `maxSched=1`
- `maxWallTime=600`
- `@info_service_hosts@` (in the host field)
- `@maxWallTime@` (in the Wall (Secs) field)

The 'Incat Series Dialog' also shows the following configuration details:

- Reporter: ☒ Use Latest Version
- Run Every: 1 hours
- Nickname: @info\_service\_hosts@:80 (Apache)
- Context: /bin/bash -l -c 'grid.middleware.globus.unit.httpmds -args'
- Limits CPU (Secs): [empty] Wall (Secs): @maxWallTime@ Memory (MB): [empty]
- Comparison: errorMessage == " || errorMessage =~ 'Inca error'
- Notification Script: EmailNotifier
- Script Arguments: inca@sdsdsc.edu

- Separate series for each macro value
- Series with undefined macros references shown in red



# Executing series in batch mode

The image shows two windows from the Inca Administration Tool. The top window, 'Inca Administration Tool', has tabs for 'Repositories', 'Resource Configuration', and 'Suites'. The 'Resource Configuration' tab is active, showing a list of resources on the left and their configuration details on the right. The 'iu-india' resource is selected. The configuration details include various macros and settings, with **batchpre** highlighted. The bottom window, 'Incat Series Dialog', shows a list of clusters on the left and configuration fields on the right. The 'FG\_PBS' cluster is selected. The configuration fields include 'backupDir', 'hpcc', 'hpccConfigUrl', 'keepfiles', 'log', 'mpirun', 'procGHz', and 'size'. The 'Context' field is highlighted, showing the **@batchpre@** macro.

Define **batchPre** macro specifying batch wrapper, scheduler type, and special submit params

Specify **batchPre** macro in context with extra batch wrapper arguments

Repositories: Resource Configuration Suites

Cluster: FG\_ALL, FG\_MPI, FG\_NIMBUS, FG\_PBS, Florida, FutureGrid, Indiana, TACC, UCSD, UChicago, inca, iu-india, iu-xray, tacc-tango, uc-hotel

Resources: Add ..., Edit ..., Delete, Clone

EUCLYPTUS\_HOSTS=eucalyptus.india.futuregrid.org eucalyptus  
FG\_ALIASES=xray.futuregrid.org sierra.futuregrid.org india.future  
FG\_LOGINS=xray.iu.futuregrid.org sierra.futuregrid.org india.futu  
GHz=2.93  
NIMBUS\_HOSTS=f1r.idp.ufl.futuregrid.org svc.uc.futuregrid.org  
UF\_EMAIL="acis-admin@acis.ufl.edu, ssmallen@sdsc.edu"  
batchPpn=8  
batchScheduler=pbs  
batchType=""  
**batchpre='\$INSTALL\_DIR/bin/cluster.batch.wrapper -scheduler'**  
emailContact=FailTo:fg-notify@futuregrid.org  
hpccEnv="module load hpcc"  
hpccId=india  
hpccPath=/N/soft/hpcc-1.3.1/hpcc  
hpccSizes=8 16 32 64 128 256  
mpirunCmd="mpirun -nn"  
post='

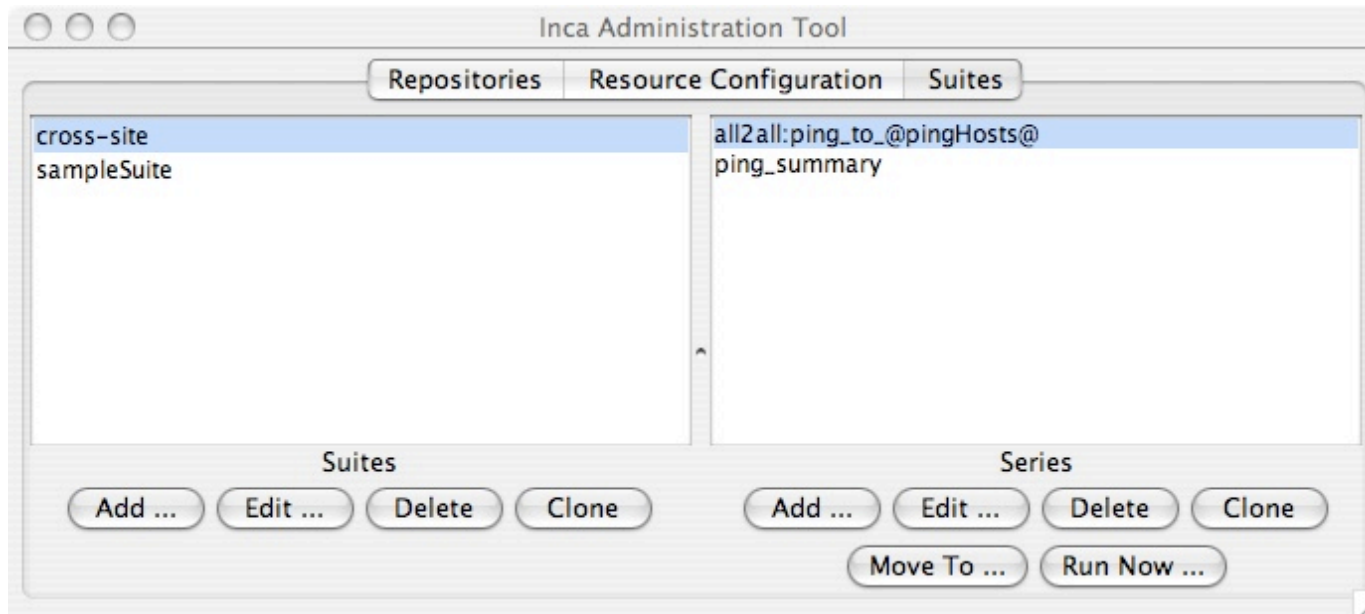
Incat Series Dialog

Cluster: FG\_ALL, FG\_MPI, FG\_NIMBUS, **FG\_PBS**, Florida, FutureGrid, Indiana, TACC, UCSD, UChicago, inca, iu-india, iu-xray

backupDir  
hpcc @hpccPath@  
hpccConfigUrl @hpccId@-hpccinf.txt.@hpccSizes@.v1  
keepfiles true  
log 5  
mpirun @mpirunCmd@ @hpccSizes@  
procGHz @GHz@  
size @hpccSizes@  
Reset to Defaults  
Arguments

Reporter \*  
☐ Use Version 7 Only ☒ Use Latest Version  
(Executes a set of HPCC runs and reports the results)  
Run Every 1 days From random ???-31 \*\*  
Nickname hpcc@hpccSizes@  
Context **@batchpre@**-nodes=":@batchPpn@:@hpccSizes@" -walllimit=420 -exec='@hpccEnv@; performance.hpcc -args@post@  
Limits CPU (Secs) Wall (Secs) Memory (MB)  
Comparison errorMessage==  
Notification Script EmailNotifier  
Script Arguments @emailContact@  
Cancel Ok

# Executing all2all series



1. Specify an all2all series
2. Specify a summary reporter series using summary.successpct.performance
3. Add All2All filter in depot

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# Agenda -- Day 1

9:00 - 10:00	Inca overview
10:00 - 11:00	Working with Inca Reporters
11:15 - 12:00	Hands-on: Reporter API and Repository
1:00 - 2:00	Inca Control Infrastructure
2:00 - 3:00	Administering Inca with incat
3:15 - 4:00	Hands-on: Inca deployment (part 1)