IPv6 support in ETICS

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for the ETICS Team

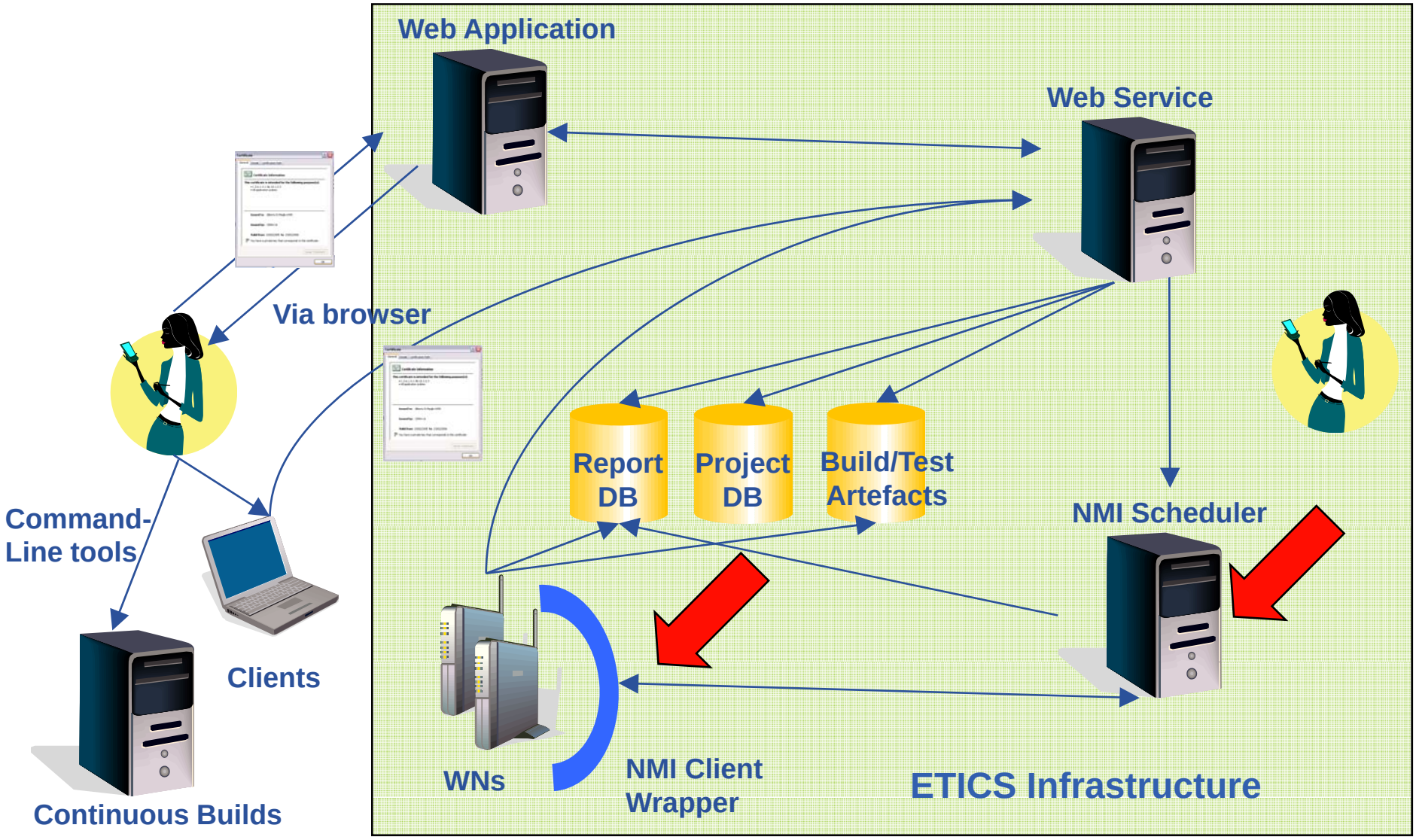
Agenda

- Motivation
- IPv6 infrastructure
- Co-scheduling aka “Automated testbed deployment”
- Future plans
- Q & A

Motivation

- **ETICS in collaboration with GARR and UREC wants to enable the community to test their software on the IPv6 network stack**

Service Overview



Practical work

- Dedicated nodes has been setup to build the ETICS-IPv6 pool including the nodes from GARR(2), UREC(1), and CERN(1)
- The GARR and UREC nodes are running the double stack: IPv6 and IPv4
- Despite the numerous requests CERN was not able to support the IPv6 networking

Practical work

- **The special Condor configuration has been adopted to assure the proper match making for IPv6 jobs**
  - on the WN (not visible to the user)

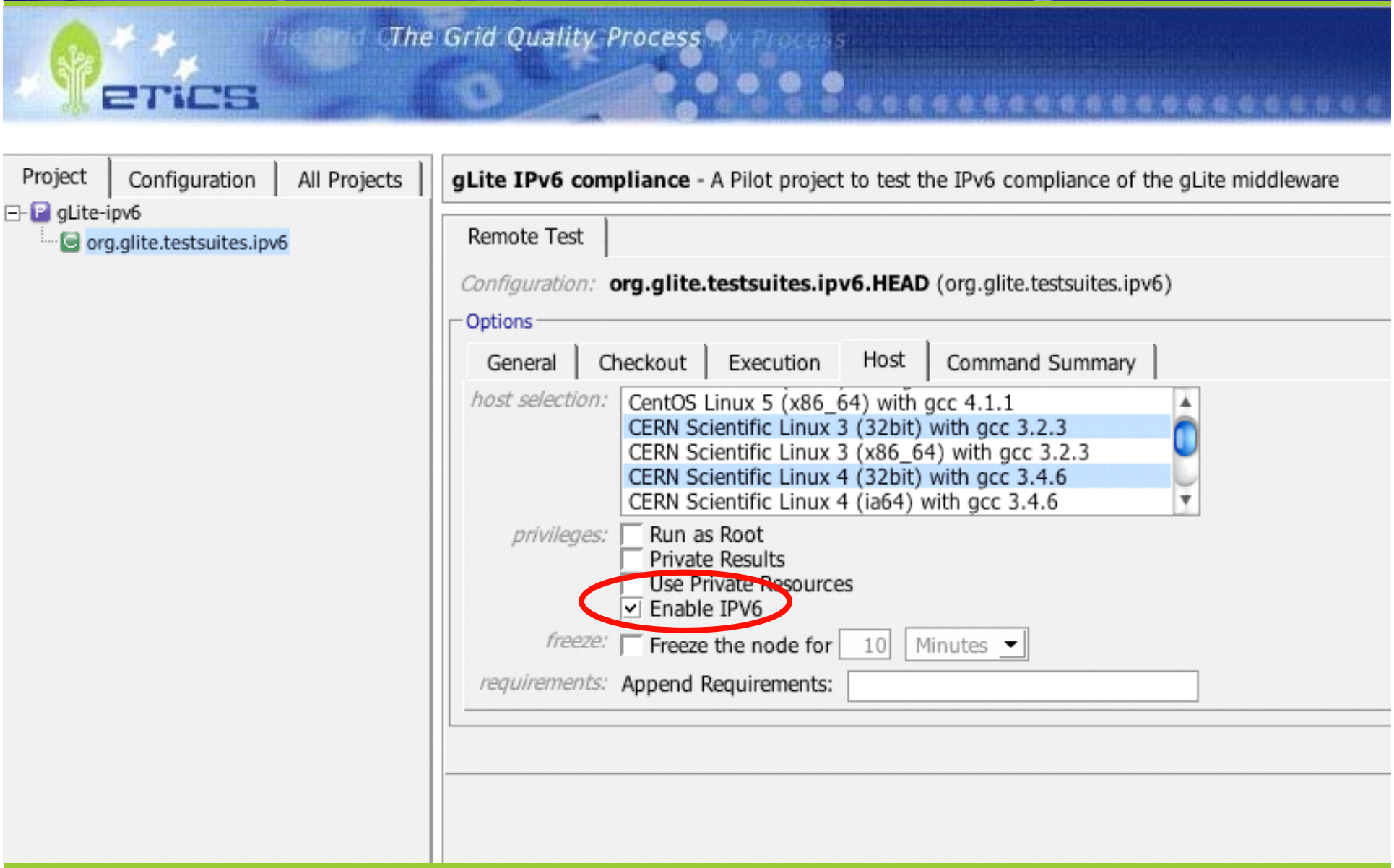
```
host_network_stack = "IPv6"
STARTD_EXPRS = $(STARTD_EXPRS)
START = (job_network
```

  - in th
  - from t (extra options)

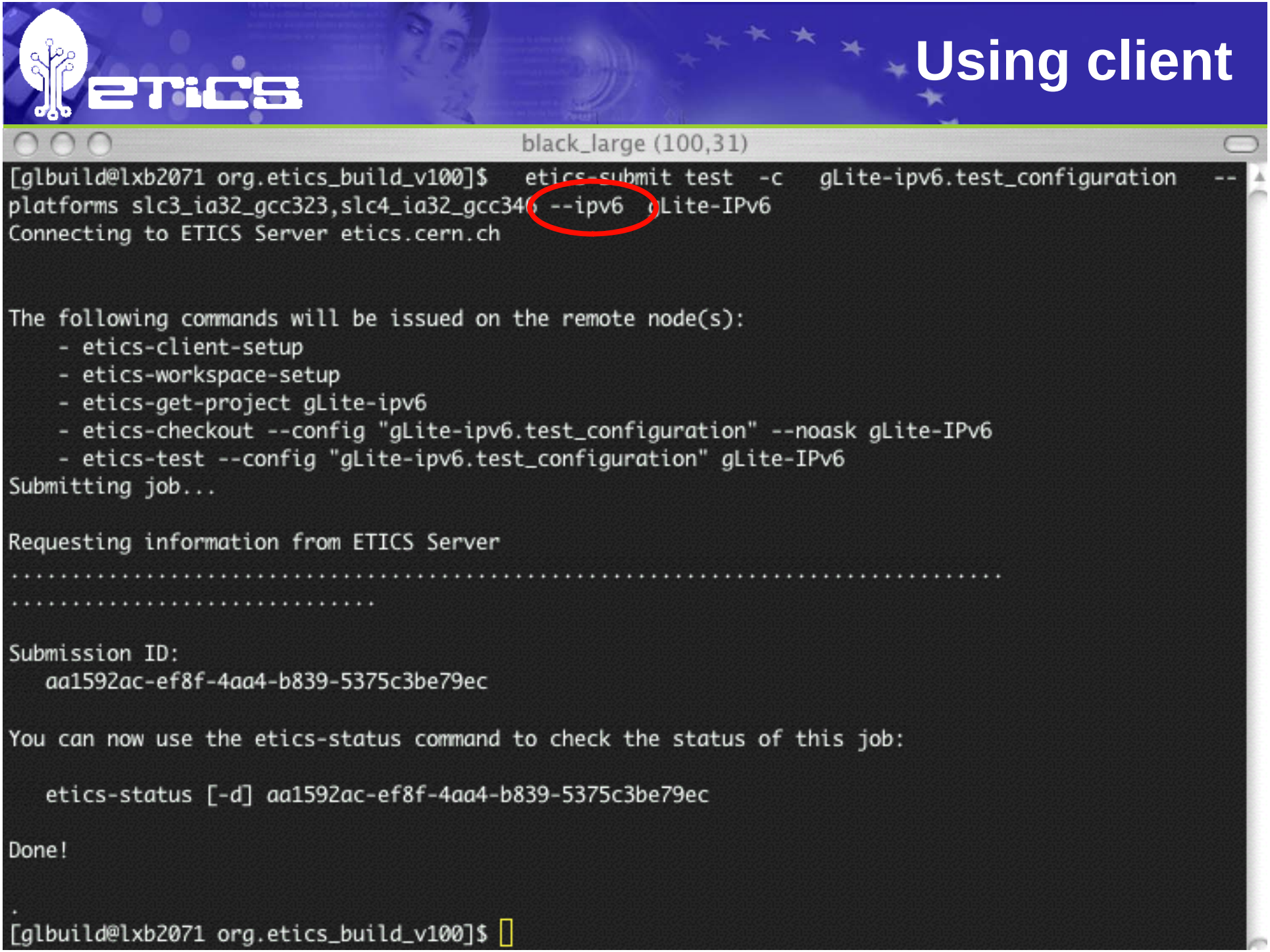
```
etics-test . slc4_ia32_gcc346 --remote-requirements
    client_re quirements=( host_network_stack =?= "IPv6" )', client_req_'++job_network_stack
    = "IPv6"' _project_name_here>
```

These are the temporary solutions and will be replaced with more elegant ones: --ipv6 option for the etics-client and a flag for the WA

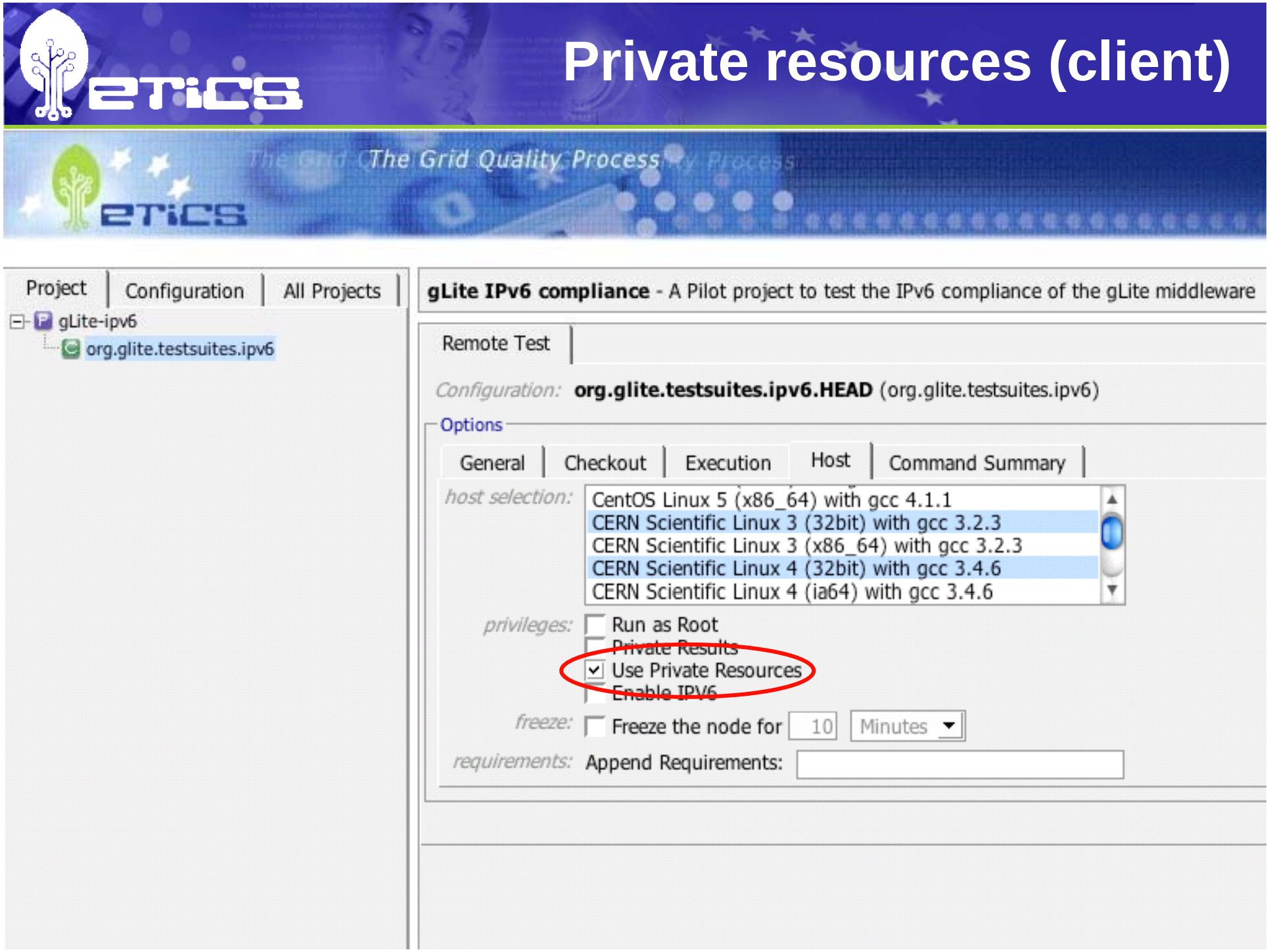
Using Web Application



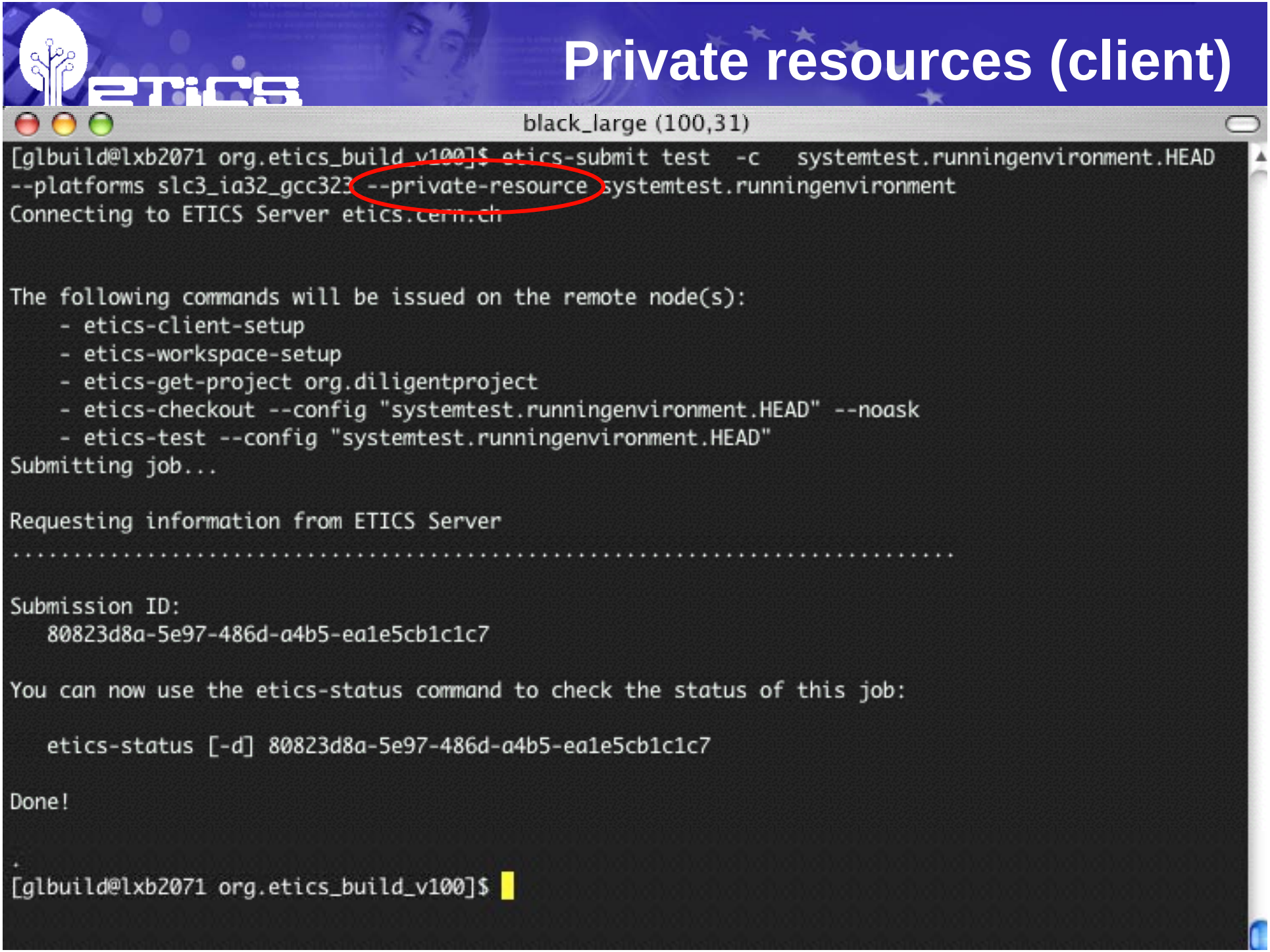
Using client



Private resources (client)



Private resources (client)



Practical work

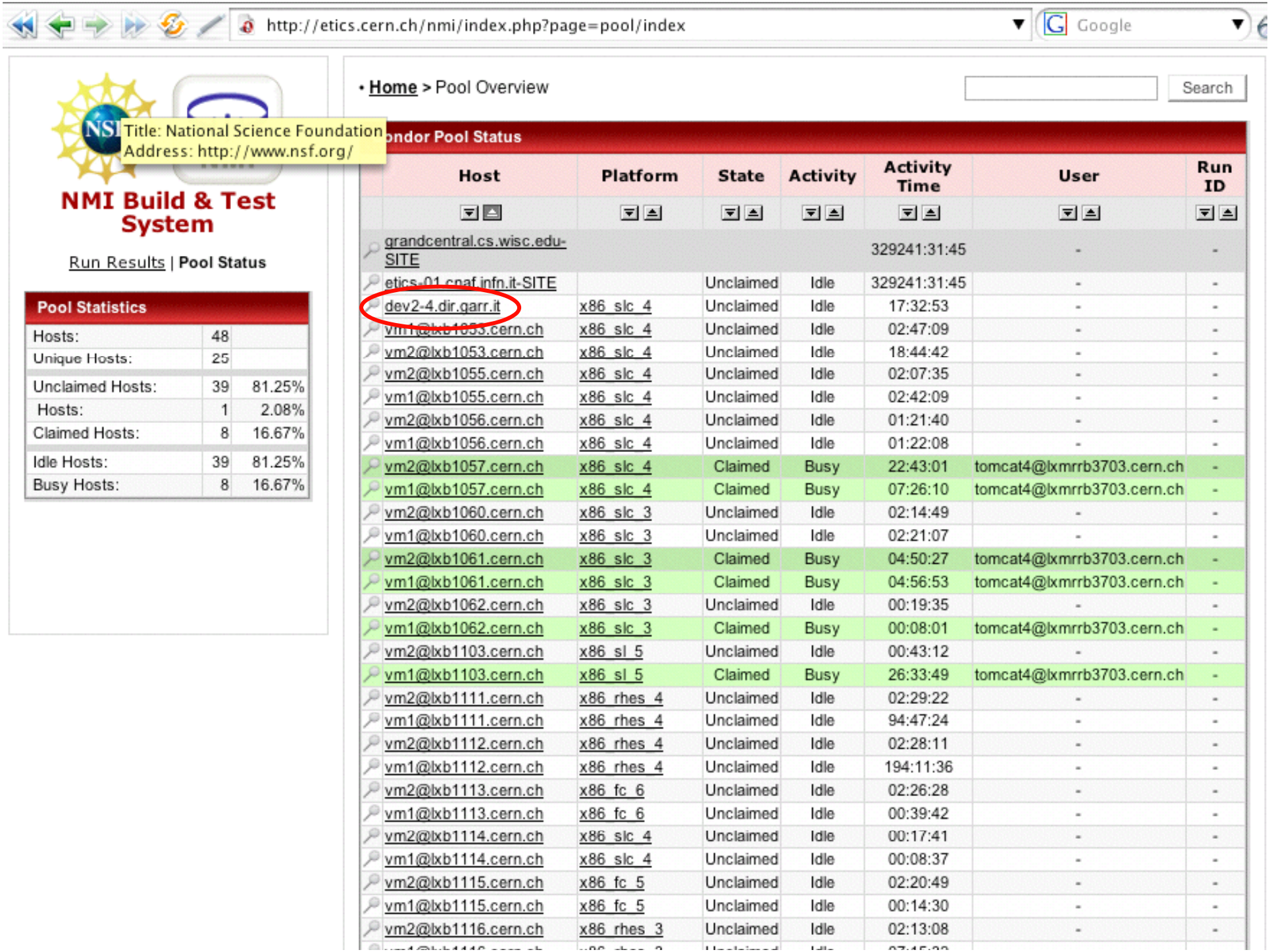
- After the initial tests the GARR and UREC nodes has been attached to the ETICS production pool:

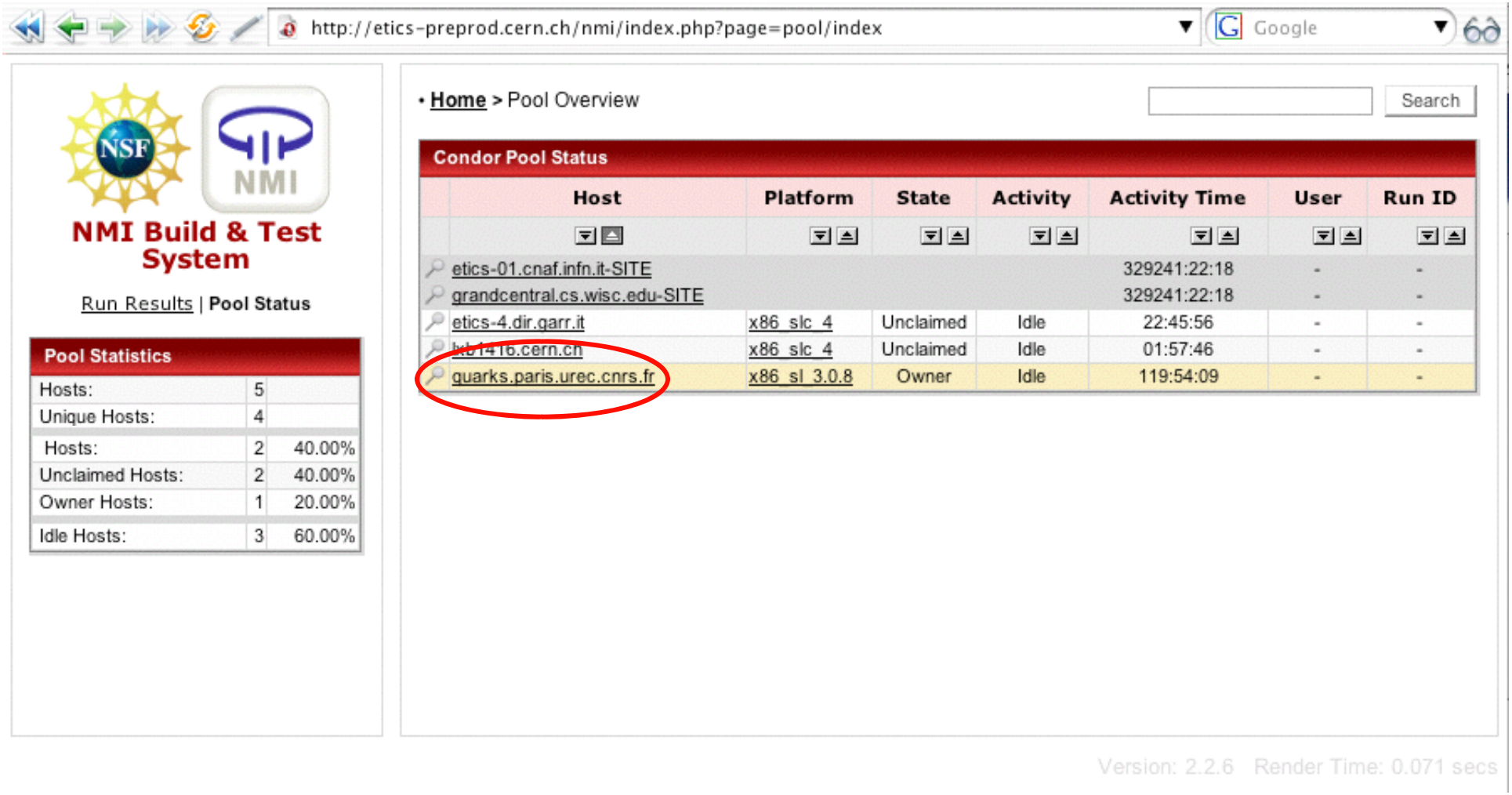
  http://etics.cern.ch/nmi/index.php?page=pool/index

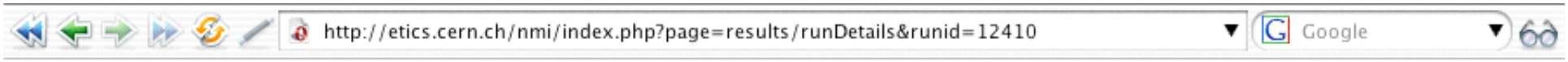
- Test pool visible at:

  http://etics-preprod.cern.ch/nmi/index.php?page=pool/index

- The IPv6 nodes should be present either in the production or pre-production pool


http://etics.cern.ch/nmi/index.php?page=pool/index
Google
Title: National Science Foundation
Address: http://www.nsf.org/
NMI Build & Test System
Run Results | Pool Status
Pool Statistics
Hosts: 48
Unique Hosts: 25
Unclaimed Hosts: 39 81.25%
Hosts: 1 2.08%
Claimed Hosts: 8 16.67%
Idle Hosts: 39 81.25%
Busy Hosts: 8 16.67%
• Home > Pool Overview
Search
ondor Pool Status
Host
Platform
State
Activity
Activity Time
User
Run ID
grandcentral.cs.wisc.edu-SITE 329241:31:45 - -
etics-01.cnaf.infn.it-SITE Unclaimed Idle 329241:31:45 - -
dev2-4.dir.garr.it x86_slc_4 Unclaimed Idle 17:32:53 - -
vm1@lxb1053.cern.ch x86_slc_4 Unclaimed Idle 02:47:09 - -
vm2@lxb1053.cern.ch x86_slc_4 Unclaimed Idle 18:44:42 - -
vm2@lxb1055.cern.ch x86_slc_4 Unclaimed Idle 02:07:35 - -
vm1@lxb1055.cern.ch x86_slc_4 Unclaimed Idle 02:42:09 - -
vm2@lxb1056.cern.ch x86_slc_4 Unclaimed Idle 01:21:40 - -
vm1@lxb1056.cern.ch x86_slc_4 Unclaimed Idle 01:22:08 - -
vm2@lxb1057.cern.ch x86_slc_4 Claimed Busy 22:43:01 tomcat4@lxmrrb3703.cern.ch -
vm1@lxb1057.cern.ch x86_slc_4 Claimed Busy 07:26:10 tomcat4@lxmrrb3703.cern.ch -
vm2@lxb1060.cern.ch x86_slc_3 Unclaimed Idle 02:14:49 - -
vm1@lxb1060.cern.ch x86_slc_3 Unclaimed Idle 02:21:07 - -
vm2@lxb1061.cern.ch x86_slc_3 Claimed Busy 04:50:27 tomcat4@lxmrrb3703.cern.ch -
vm1@lxb1061.cern.ch x86_slc_3 Claimed Busy 04:56:53 tomcat4@lxmrrb3703.cern.ch -
vm2@lxb1062.cern.ch x86_slc_3 Unclaimed Idle 00:19:35 - -
vm1@lxb1062.cern.ch x86_slc_3 Claimed Busy 00:08:01 tomcat4@lxmrrb3703.cern.ch -
vm2@lxb1103.cern.ch x86_sl_5 Unclaimed Idle 00:43:12 - -
vm1@lxb1103.cern.ch x86_sl_5 Claimed Busy 26:33:49 tomcat4@lxmrrb3703.cern.ch -
vm2@lxb1111.cern.ch x86_rhes_4 Unclaimed Idle 02:29:22 - -
vm1@lxb1111.cern.ch x86_rhes_4 Unclaimed Idle 94:47:24 - -
vm2@lxb1112.cern.ch x86_rhes_4 Unclaimed Idle 02:28:11 - -
vm1@lxb1112.cern.ch x86_rhes_4 Unclaimed Idle 194:11:36 - -
vm2@lxb1113.cern.ch x86_fc_6 Unclaimed Idle 02:26:28 - -
vm1@lxb1113.cern.ch x86_fc_6 Unclaimed Idle 00:39:42 - -
vm2@lxb1114.cern.ch x86_slc_4 Unclaimed Idle 00:17:41 - -
vm1@lxb1114.cern.ch x86_slc_4 Unclaimed Idle 00:08:37 - -
vm2@lxb1115.cern.ch x86_fc_5 Unclaimed Idle 02:20:49 - -
vm1@lxb1115.cern.ch x86_fc_5 Unclaimed Idle 00:14:30 - -
vm2@lxb1116.cern.ch x86_rhes_3 Unclaimed Idle 02:13:08 - -


http://etics-preprod.cern.ch/nmi/index.php?page=pool/index
Google
NMI Build & Test System
Run Results | Pool Status
Pool Statistics
Hosts: 5
Unique Hosts: 4
Hosts: 2 40.00%
Unclaimed Hosts: 2 40.00%
Owner Hosts: 1 20.00%
Idle Hosts: 3 60.00%
• Home > Pool Overview
Search
Condor Pool Status
Host
Platform
State
Activity
Activity Time
User
Run ID
etics-01.cnaf.infn.it-SITE 329241:22:18 - -
grandcentral.cs.wisc.edu-SITE 329241:22:18 - -
etics-4.dir.garr.it x86_slc_4 Unclaimed Idle 22:45:56 - -
x86_slc_4 Unclaimed Idle 01:57:46 - -
quarks.paris.urec.cnrs.fr x86_sl_3.0.8 Owner Idle 119:54:09 - -
Version: 2.2.6 Render Time: 0.071 secs



NMI Build & Test System

Run Results | Pool Status

• Home > Runs Overview > Run Details

Search

Run Details - a Test project for the ETICS/EGEE/EUChina IPv6 tests

Run ID:	12410	**GID:**	tomcat4_lxmrrb3703.cern.ch_1184868848_17071
User:	Mario Reale	**Run Type:**	TEST
Project:	gLite IPv6 compliance	**Project Version:**	-
Component:	gLite IPv6 compliance	**Component Version:**	-
Start:	Jul-19-2007 16:14	**Finish:**	Jul-19-2007 16:35
Submission Host:	lxmrrb3703.cern.ch	**Duration:**	00:21:40
Metronome Version:	2.2.7	**Metronome Install Path:**	/opt/nmi-2.2.7
Result:	Complete		

Tasks Statistics

Total Tasks:	7	
Completed:	7	100.00%
Running:	0	0.00%
Queued:	0	0.00%
Failed:	0	0.00%

File Information

Run Directory:	View
Archived:	Yes
Pinned Until:	-

Task Results

ID	Result	Output	Platform	Name	Host	Start	Duration
83986	Complete		local	fetch.eticsBuildSystem...	lxmrrb3703.cern.ch	Jul-19-2007 16:14	00:00:07
84006	Complete	-	local	post_all	lxmrrb3703.cern.ch	Jul-19-2007 16:35	00:00:29
84007	Complete	- -	local	common.put	lxmrrb3703.cern.ch	Jul-19-2007 16:35	00:00:08
83987	Complete	- -	x86_slc_4	platform_job		Jul-19-2007 16:15	00:19:35
83997	Complete	-	x86_slc_4	remote_declare	dev2-4.dir.garr.it	Jul-19-2007 16:27	00:00:00
83998	Complete		x86_slc_4	remote_task	dev2-4.dir.garr.it	Jul-19-2007 16:27	00:03:11
84002	Complete		x86_slc_4	remote_post	dev2-4.dir.garr.it	Jul-19-2007 16:31	00:00:00

Page [1] of 1 Rows per page 20 Go

Version: 2.2.7 Render Time: 0.108 secs

Practical work

- **Mario, Xavier will tell more about the performed tests.**

Lesson learned

- **Taking into account the site policies building the Condor pool out of geographically dispersed Worker Nodes isn't a a trivial task as it may appear. Numerous issues found like:**
  - Reverse DNS
  - Solved by hard-coding the IP addresses in the Condor config files
  - Firewall policies (procedures, transitional openings)
  - Condor: Job Match-making: partial match was causing the ETICS production pool throughput degradation
  - Power-cuts, etc.
- **Mail, IM, SMS, phone were very useful**

Conclusions

- **ETICS in collaboration with GARR and UREC is providing the infrastructure enabling the community to perform the IPv6 tests**
- **The allocation of more resources might be needed in the future**
- **Automated deployment procedures should be established to guarantee the service persistency**
- **We plan to continue the collaboration**

Where we are?

- New layout of ETICS Web Application featuring the IPv6 check-box is available and deployed as part of Release v1.2
- Etics client with the --ipv6 switch is already available and deployed as part of Release v1.2
- IPv6 plug-in results (Alberto c
- root-enabled test: being work e available in the next 1-2 week

is already there ;)

- Co-scheduling in production - coming soon

IPv6 plug-in results

IPV6 Code Compliance Checker

Project: etics_branch_1_3_0 (org.etics)
Configuration: etics_branch_1_3_0 (org.etics)
Date: 01/10/2007 11:39:08
Success rate: 95 %
Status: Failed

Component name	Configuration name	Result
org.etics.administration.web-application	etics-administration-web-application_R_1_1_0_1	Success
org.etics.build-system.browser	etics-build-system-browser_R_1_1_3_1	Success
org.etics.build-system.client-py	etics-build-system-client-py_branch_1_3_0	Failed
org.etics.build-system.java-utils	etics-build-system-java-utils_R_1_0_1_1	Success
org.etics.build-system.plugin-framework	etics-build-system-plugin-framework_branch_1_2_0	Success
org.etics.build-system.webservice	etics-build-system-webservice_R_1_3_0_0	Success
org.etics.build-system.webservice-interface	etics-build-system-webservice-interface_GENERIC	Success
org.etics.build-system.webservice-stub-java	etics.build-system.webservice-stub-java_GENERIC	Success
org.etics.build-system.webservice-stub-py	etics-build-system-webservice-stub-py_GENERIC	Success
org.etics.data-model.data-db-mysql	etics-data-model-data-db-mysql_branch_1_3_0_0	Success
org.etics.data-model.schema-db-mysql	etics-data-model-schema-db-mysql_branch_1_3_0_0	Success
org.etics.deployment.server	etics-deployment-server_R_1_1_9_1	Success
org.etics.nmi.scripts	etics-nmi-scripts_R_1_2_1_1	Success
org.etics.plugins.ipv6	etics-plugins-ipv6_R_1_0_0_1	Success
org.etics.plugins.sloccount	etics-plugins-sloccount_R_1_1_1_1	Success
org.etics.portal.web-application	etics-portal-web-application_R_1_1_1_1	Success
org.etics.repository.browser	etics-repository-browser_R_1_0_0_1	Success
org.etics.test-system.testmanager	etics-test-system-testmanager_R_1_7_0	Success

Is my code IPv6 compliant?

- **You can check that on your own by setting the ipv6check flag when building with ETICS:**

etics-build **-p ipv6check=1** --config etics_branch_1_3_0 --continueonerror --createsource org.etics

Automatic Testbed Deployment

- **ETICS is testing a new feature to allow users to dynamically deploy testbeds and execute testsuites**
- **This feature leverages metadata already defined in ETICS, in terms of dependencies, and parameterised deployment, configuration and execution commands**
- **This new feature will allow users to**
  - Define their deployment model (e.g. how many machines, running which set of services)
  - Deploy several services across different machines
  - Define synchronisation messages during deployment and execution
  - Execute testsuites on this dynamically deployed testbed
  - Access a single and complete report, providing all logs from all machines
  - As for the build procedure, the automatic testbed deployment feature can be developed and test locally, on a single machine or on several machines
- **Note: configuration can be implemented using configuration systems such as YAIM, SmartFrog, etc**
- **We believe this feature is unmatched by any other publicly available service**

Automatic Testbed Deployment - 2

- **Current status**
  - This feature leverages the *co-scheduling* feature of Metronome and Condor
  - This feature has successfully been tested at CERN and is currently planned for the next official release of Condor and ETICS
  - ETICS v1.2 already provided a new set of commands and Python API for synchronisation. This feature already allows users to prepare dynamic testbed deployments, using local resources

- **The ETICS Build and Test Web-Service is been upgraded for this feature, as well as the Build and Test Web Application**

- **This feature is targeted for ETICS v1.3**

New ETICS Commands

- **ETICS v1.2 released three new commands (and a Python API), for users to model synchronisation between services and/or tests, during deployment, configuration and execution**
- **Accessory:**
  - `etics-get [options] <key>`
  - `etics-set [options] <key> <value>`
  - To help local debugging, the option `--uuid <uuid>` can be used to query the co-scheduling information system
  - Using option `-b/--block` the getter can block until a timeout is reached or a value is set
- **Setup:**
  - `etics-coschedule-local-setup [options] <no-of-nodes>`
  - The option `-o <file>` can be used to share the uuid between workspaces
- **Aborting: when an error occurs, the '*abort*' flag is set, instructing all tasks to terminate in a controlled fashion**

What's next

Q & A

http://www.eu-etics.org

etics-support@cern.ch