DOCUMENTATION OF THE FIRST PROTOTYPE - PORTALS AND ROAMING ACCESS - INSTALLATION GUIDE

FINAL VERSION

WP3.1

Document Filename:	**CG3.1-D3.3-v1.0-PSNC031-PrototypeInstallationGuide.doc**
Work package:	**WP3.1**
Partner(s):	**PSNC, ALGO, DATAMAT**
Lead Partner:	**PSNC**
Config ID:	**CG3.1-D3.3-v1.0-PSNC030-PrototypeInstallationGuide**
Document classification:	**PUBLIC**

Abstract: This document is intended for the Site Administrator of CrossGrid testbed resources and may also be useful for people that need detailed information about the WP3

release…

Delivery Slip

	Name	Partner	Date	Signature
From				
Verified by				
Approved by				

Document Log

Version	Date	Summary of changes	Author
1-0-DRAFT-A	08/01/03	Draft version	Rafał Lichwała, Bartosz Palak, Marcin Płóciennik, Paweł Wolniewicz, Mirosław Kupczyk, Norbert Meyer, Stefano Beco, Marco Sottilaro
1-0-DRAFT-A	08/01/03	Updated version	Rafał Lichwała, Bartosz Palak, Marcin Płóciennik, Paweł Wolniewicz, Mirosław Kupczyk, Norbert Meyer, Stefano Beco, Marco Sottilaro, Yannis Perros, Angelos Sphyris
1-0-DRAFT-A	15/01/03	Updated version (with Installation Guide from JobSubmissionService)	Rafał Lichwała, Bartosz Palak, Marcin Płóciennik, Paweł Wolniewicz, Mirosław Kupczyk, Norbert Meyer, Stefano Beco, Marco Sottilaro, Yannis Perros, Angelos Sphyris

CONTENTS

1.OVERVIEW

1.1.ROAMING ACCESS SERVER INSTALLATION

This document describes the installation procedure of the Roaming Access Server services (RAS). The Roaming Access Server is a part of the CrossGrid project architecture and provides a set of web services that are responsible for managing user and application profiles, job submission services etc.

The RAS software is delivered as a set of RPM binary packages which can be installed using "rpm" tool available in RedHat operating system. After the successful RPM installation, some additional actions (described in this document) are required.

1.2.APPLICATION PORTAL INSTALLATION

This document also describes the installation procedure of the Application Portal (AP). This portal provides a user-friendly web-based environment for carrying out various tasks related to the handling of jobs that are processed by individual applications of CrossGrid. These tasks include the submission of jobs, the running of benchmarks, Grid monitoring, file transfer, management of Grid resources, MPI verification, performance measurement, user authentication and storage of personal user settings.

1.3.JOB SUBMISSION SERVICES INSTALLATION

The third part of this document describes requirements, configuration and installation procedure for the Job Submission Services. Job Submission is a part of the Roaming Access Server, but its installation process was separately described for better understanding.

2.PREREQUISITES FOR THE ROAMING ACCESS SERVER

2.1.SYSTEM REQUIREMENTS OF THE ROAMING ACCESS SERVER

2.1.1.Operating system requirements

There should be no problems with the RAS installation procedure on different operating systems, provided the RPM packages formats? are understood by this system and software requirements are satisfied.

The RAS rpm package was built on the linux RedHat 7.3 operating system that contained standard software packages included in this contribution and release version.

2.1.2.Installed software requirements

Before the RAS rpm package can be successfully installed into the system, the following related software must be installed and configured:

- Tomcat Server (packages: "tomcat4", "tomcat4-webapps") - (version 4 or higher) - full installation and web applications support for tomcat;
- OpenLDAP Database (packages: "openldap", "openldap-clients", "openldap-servers") - (version 2 or higher) - client and server;
- Java 2 Runtime Environment (package: "j2re") - (version 1.4 or higher).

The following RPM packages are delivered together with the RAS package and can be installed before the installation of RAS:

- tomcat4-4.1.12-full.2jpp.noarch.rpm;
- tomcat4-webapps-4.1.12-full.2jpp.noarch.rpm.
- openldap-2.0.23-4.i386.rpm;
- openldap-clients-2.0.23-4.i386.rpm;
- openldap-servers-2.0.23-4.i386.rpm;
- j2re-1.4.1-fcs.i586.rpm;

2.1.3.Running system services requirements

Before the installation script, which is a part of the RAS package, is executed, the following system services must be properly configured and started:

- OpenLDAP Database server;
- Tomcat4 server (with support for web applications).

If these services are not running during the execution of the installation script from the RAS package, they will be started by this script, but some error messages may appear.

2.1.4.Network configuration requirements

The network traffic generated by GridFTP uses ports:

- 2811 as main GridFTP port;
- TCP ports from range 13000-17000 for GridFTP data;

The network traffic generated by axis web-services uses port: 8080

2.2.SYSTEM REQUIREMENTS OF THE APPLICATION PORTAL

The only tools needed to build the Application Portal software are an unzipping utility and the MySQL environment (which should have already been installed).

2.2.1.Operating system requirements

The Application Portal may be installed on all operating systems that allow the running of PHP scripts over an Apache server.

These systems include MS-Windows and Linux.

2.2.2.Installed software requirements

Prior to the installation and running of the Application Portal, the following related software must be installed and configured:

- the Apache server (version 1.3.x or higher)
- the PHP language with Java extension enabled
- an environment which supports MySQL; the phpMyAdmin environment is recommended
- the Java 2 Runtime Environment (package "j2re" - version 1.4 or higher)

2.2.3.Running system services requirements

The Apache server must be started.

2.3.SYSTEM REQUIREMENTS OF JOB SUBMISSION SERVICES

2.3.1.Tools needed both at building time and at run time

2.3.1.1. The Web-Services interface needs

- Apache Axis (last version 1.0) (download at http://xml.apache.org/axis/) (I am using version 1.0beta)
- Apache Tomcat version >= 3.3.1 (last version 4.1; I amusing version 4.0.4) (http://jakarta.apache.org/tomcat/)

2.3.1.2. The EDG sw (JSM core and API interface) needs

- Expat 1.95.1 (http://datagrid.in2p3.fr/distribution/config/external.html)
- Expat-devel 1.95.1 (http://datagrid.in2p3.fr/distribution/config/external.html)
- Classads library 0.9.1 (http://datagrid.in2p3.fr/distribution/external/RPMS/classads-0.0-edg2.i386.rpm)
- Swig 1.3.9 (http://datagrid.in2p3.fr/distribution/config/external.html)
- Globus Toolkit 2.0 Beta 21 or higher (download at http://datagrid.in2p3.fr/distribution/globus/beta-21)
  The EDG software has been tested and runs on platforms running Globus Toolkit 2.0 Beta Release 21 on top of Linux RedHat 6.2

This is the list of required packages:

- globus_gss_assist-gcc32dbgpthr_rtl-2.0-21
- globus_gssapi_gsi-gcc32dbgpthr_rtl-2.0-21
- globus_ssl_utils-gcc32dbgpthr_rtl-2.1-21
- globus_gass_transfer-gcc32dbg_rtl-2.0-21
- globus_openssl-gcc32dbgpthr_rtl-0.9.6b-21
- globus_ftp_control-gcc32dbg_rtl-1.0-21
- globus_user_env-noflavor_data-2.1-21
- globus_gss_assist-gcc32dbg_rtl-2.0-21
- globus_gssapi_gsi-gcc32dbg_rtl-2.0-21
- globus_ftp_client-gcc32dbg_rtl-1.1-21
- globus_ssl_utils-gcc32dbg_rtl-2.1-21
- globus_ssl_utils-gcc32dbg_pgm-2.1-21
- globus_gass_copy-gcc32dbg_rtl-2.0-21
- globus_gass_copy-gcc32dbg_pgm-2.0-21

- globus_openssl-gcc32dbg_rtl-0.9.6b-21
- globus_common-gcc32dbg_rtl-2.0-21
- globus_profile-edgconfig-0.9-1
- globus_io-gcc32dbg_rtl-2.0-21
- globus_core-edgconfig-0.6-2
- obj-globus-1.0-4.edg
- globus_cyrus_sasl-gcc32dbgpthr_rtl-1.5.27-21
- globus_libtool-gcc32dbgpthr_rtl-1.4-21
- globus_mds_common-gcc32dbg_pgm-2.2-21
- globus_openldap-gcc32dbg_pgm-2.0.14-21
- globus_openldap-gcc32dbgpthr_rtl-2.0.14-21
- globus_core-gcc32dbg_pgm-2.1-21

2.3.1.3.Web-Services interface and EDG sw need:

- Java : j2sdk 1.4

2.3.2.Needed tools only at building time (EDG sw)

- gcc version 2.95.2 or higher
- GNU make version 3.78.1 or higher
- GNU autoconf version 2.13
- GNU libtool 1.3.5
- GNU automake 1.4
- GNU m4 1.4 or higher
- RPM 3.0.5
- egcs >= 1.1.2
- Perl IO Stty 0.02, Perl IO Tty 0.04 (download at http://datagrid.in2p3.fr/distribution/config/external.html)
- Perl 5 (download at http://datagrid.in2p3.fr/distribution/config/external.html)

3.CROSSGRID SPECIFIC DEFAULTS

3.1.SPECIFIC FILE PATH DEFAULTS FOR THE ROAMING ACCESS SERVER

RAS package has the following file path defaults used in the installation procedure and in the post-install script execution:

- "/usr/crossgrid_ras" - path to the RAS installation files, where the "ras_install" script can be found and executed after the installation;
- "/etc/init.d/tomcat4" - script or binary file which can be used for starting and stopping the Tomcat4 server daemon;
- "/etc/tomcat4/tomcat4.conf" - default location of the tomcat4 configuration file, where the "ras_install" script writes some changes;
- "/var/tomcat4/webapps" - default location where the web application files are deployed;
- "/etc/openldap/slapd.conf" - default location of the OpenLDAP configuration file, where the "ras_install" script makes some changes;
- "/etc/init.d/ldap" - script or binary file which can be used for starting and stopping the OpenLDAP server daemon;

3.2. ENVIRONMENT SETTINGS FOR THE JOB SUBMISSION SERVICES

3.2.1."portal" package

JAVA_HOME= (path to Java installation)

It needs to include the following paths in CLASSPATH:

- path to "org" Java package
- the following jar files for Axis (they should be located in $CATALINA_HOME/webapps/axis/WEB-INF/lib)
    - log4j-core.jar
    - iaik_jce_full.jar
    - axis.jar
    - jaxrpc.jar
    - saaj.jar
    - commons-logging.jar
    - commons-discovery.jar

- wsdl4j.jar
- xerces.jar
- servlet.jar
- log4j-core.jar
- tt-bytecode.jar
- tools.jar

3.2.2."roamingaccessserver" package

CATALINA_HOME= (path to TomCat installation)

EDG sw Requirements:

SWIG_INSTALL_PATH= (path to Swig installation)
EXPATH_INSTALL_PATH= (path to EXPATH installation)
PYTHON_INSTALL_PATH= (path to EXPATH installation)
GLOBUS_INSTALL_PATH=(path to Globus installation)
CLASSAD_INSTALL_PATH= (path to ClassAd installation)
CG_OPENSSL_INCL= (path to OpenSSL's include directory containing header files)

CG_EDG_LOCATION= (path to location of the "edg" package; for example in cvs its value should be : /usr2/cvs/db2/WP3)

LD_LIBRARY_PATH requirements:

It needs to include the following paths in LD_LIBRARY_PATH:

- $CG_EDG_LOCATION/edg/Workload/Broker/Client/.libs
- $CG_EDG_LOCATION/edg/Workload/Logging/Client/.libs
- $CG_EDG_LOCATION/edg/Workload/lib
- $CG_EDG_LOCATION/edg/workload/userinterface/common/.libs
- $CLASSAD_INSTALL_PATH/lib

- $GLOBUS_INSTALL_PATH/lib
- $EXPATH_INSTALL_PATH/lib
- /usr/local/lib
- /usr/lib

CLASSPATH requirements:

It needs to include the following paths in CLASSPATH:

- path to "org" package
- $CATALINA_HOME/common/lib
- the following jar files:
  - globus.jar (Globus)
  - cog.jar (JavaCOG)
  - classad.jar (ClassAds)
- the following jar files for Axis (they should be located in $CATALINA_HOME/webapps/axis/WEB-INF/lib)
  - log4j-core.jar
  - iaik_jce_full.jar
  - axis.jar
  - jaxrpc.jar
  - saaj.jar
  - commons-logging.jar
  - commons-discovery.jar
  - wsdl4j.jar
  - xerces.jar
  - servlet.jar
  - log4j-core.jar

- tt-bytecode.jar
- tools.jar

- Axis' directory for Java packages (It should be $CATALINA_HOME/webapps/axis/WEB-INF/classes)
- CG_EDG_LOCATION

4.OBTAINING THE WP3 SOFTWARE FOR THE ROAMING ACCESS SERVER

The main repository source code is available at FZK. This is the primary and official CVS data base. It can be located at the following address:

http://gridportal.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp3/wp3_1-portals/

(the working instance of the WP3.1 data is located at PSNC)

5.CONFIGURING THE SOFTWARE, SERVICES AND TOOLS FOR THE ROAMING ACCESS SERVER

5.1.INSTALLATION PROCEDURE OF THE ROAMING ACCESS SERVER

Neither any configuration nor building is needed before the installation, because RAS software is delivered as ready-to-install binary packages. The whole installation of the RAS services contains several simple steps which must be prepared from the root's (system administrator) account and is limited to use the "rpm" tool with "install" or "upgrade" option set:

- Installation of the Tomcat4 server;
- Configuration and starting the tomcat4 system service with support for web applications;
- Installation of the OpenLDAP database server and client;
- Configuration and starting the OpenLDAP database server;
- Installation of the RAS service from the RPM package ("crossgrid_ras" package);
- Execution of the "ras_install" script from the RAS directory;

If there are no error messages returned from the installation script and this script finishes its execution, RAS web services are successfully installed and started.

RAS is ready to use.

5.2.INSTALLATION PROCEDURE OF THE APPLICATION PORTAL

A virtual directory named cgaportal must be properly configured within the Apache environment. The actual portal software consists of a number of PHP scripts, a MySQL script and some associated utility files (e.g. logos). All of these scripts are delivered in a zip archive. Unzipping this archive into 'cgaportal' will produce the correct directory structure in which these files will reside.

In addition, the Java class Tester is used for accessing various webservices of the Remote Access Server environment. This class is provided in a separate .class file together with the Client.jar file which contains the necessary classes for accessing RAS. These two files must be stored in the local system and included in the Java class path through an appropriate declaration in the php.ini file; that is, the path to these files has to be included in the java.class.path directive in the Java section of php.ini.

After doing so , the file cgaportal.sql must be run through the MySQL environment that has already been installed. This produces a database called cgaportal and containing a number of tables that are necessary for the proper operation of the portal software.

5.3.INSTALLATION PROCEDURE OF THE JOB SUBMISSION SERVICES

5.3.1."edg" package

- In the Workload directory run the following command:
./recursive-autogen.sh

- Now you can run configure as follows:
./configure --enable-userinterface=yes --disable-all

- Run "make" in the Workload's base directory.

- Run "make_links"

It is possible to run "make clean" and start from 4) point.

5.3.2."portal" package

- In the Workload directory run the following command:
build_jss_client

5.3.3."roamingaccessserver" package

- In the Workload directory run the following command:
./configure TOMCAT_PORT

where TOMCAT_PORT = TomCat's port number

- make_service

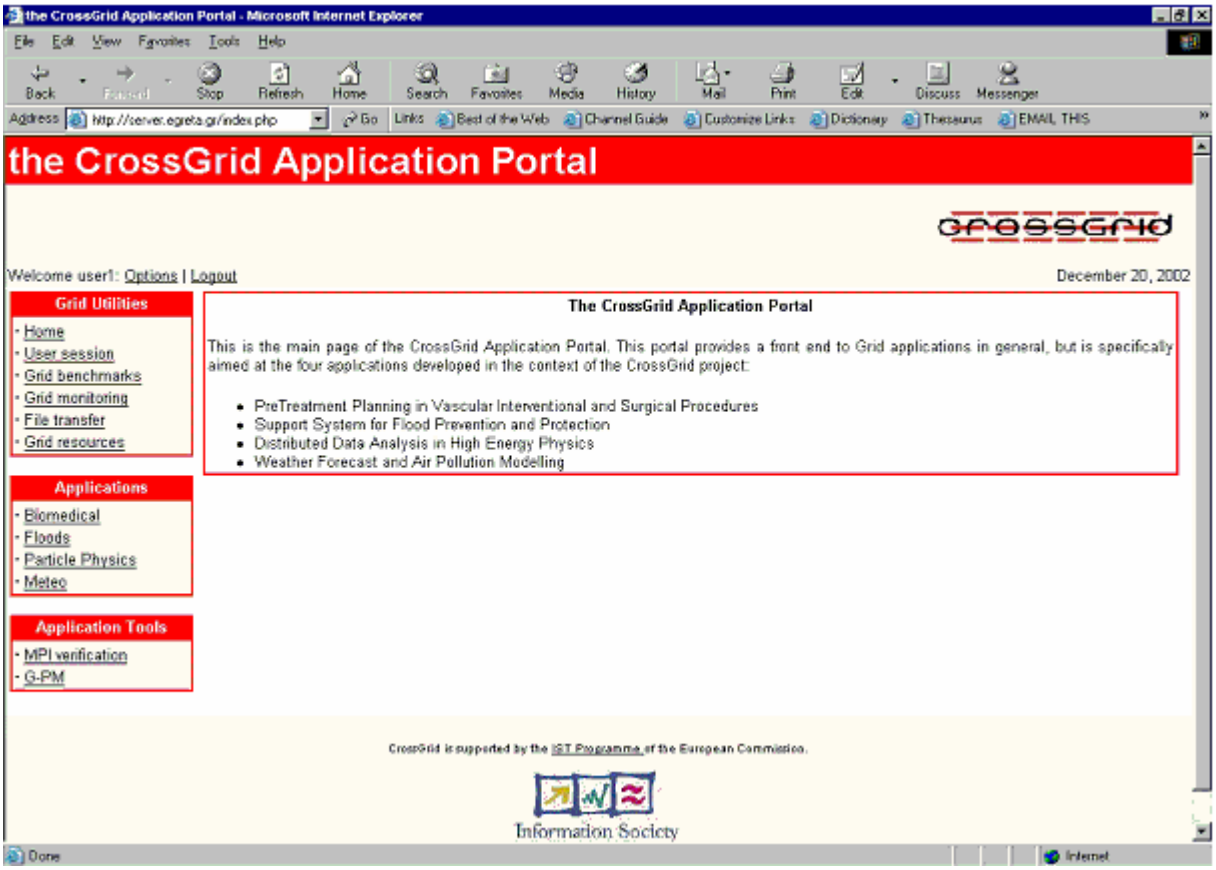
6.TESTING YOUR INSTALLATION

6.1. ROAMING ACCESS SERVER TESTS

The test procedures of the roaming access server functionality has been described in a separate document “CG3.1-D3.3-v1.0-PSNC034-PrototypeTests.doc”.

6.2. APPLICATION PORTAL TESTS

If the installation has been successful, the portal pages will be accessible via a browser. If the index.php file is loaded into the browser, the following image will appear:



From there, all links should work properly.