EGEE Site Deployment & Management Using the Rocks Toolkit

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Motivation

• EGEE sites lack complete solutions to:
  • Build managed Grid Infrastructures
  • Including: distribution, installation, configuration
• Looking for
  • Fully automated installation for fast and ease site deployment
  • Local and remote installation
• UMinho Research objectives:
  • To support European wide Civil Protection infrastructure
  • To explore the capabilities of the grid in CP applications
EGEE site - requirements

Elements and Workers
gLite middleware

- Set of software packages
  - Created and tested with ScientificLinux [Cern]
- Node types:
  - Computing Element
  - Storage Element
  - User Interface
  - MON
  - Worker Nodes
gLite installation

- Site wide configuration files
- Global settings
- Supported VO settings
- Supported users and groups
- X.509 certificate files for some node types
- Install gLite package for the desired node type
- Run yaim to configure the node
Rocks

• Currently in use at Universidade do Minho
• RedHat Enterprise Linux based
  • May use any compliant distro
• Centralised installation and administration
• Cluster node’s type defined by *Appliances*
• Customisable installation process
  • Based in Direct Acyclic Graphs
• Software bundles created via *Rolls*
DAG nodes & DAG

- Each DAG node is defined in a XML file
  - RPM and source packages to install
  - Pre and Post installation routines
  - Machine settings (IP address, partition information ...)
- DAG is defined in a XML file
  - Defines dependencies between nodes
  - Defines an installation order
- Any node in the DAG can become an Appliance
Rolls

- Roll represent a software bundle
- Add new features to standard Rocks installation
  - Provides new appliances
  - Provides new services
- Built using the rocks’ cvs version
Using Rocks to install a EGEE site!
Egee roll

- Contains an *Appliance* for each middleware node type
- Provides a skeletal site wide configuration file
- Interface used to supply site specific information
  - IP information and FQDN for machines
  - Supported VOs and number of users
  - SE disk management model
  - ...

Bruno Oliveira
Roll

- Create a directories structure with the relevant files

- D.A.G.
  - egee.xml
- Appliances
  - compute-element.xml
  - storage-element.xml
  - user-interface.xml
  - worker-node.xml
- Skeletal Files
  - site-config
    - site-info.def
    - users.conf
    - groups.conf
- Auto Conf File
  - configce
  - configse
  - configui
  - configwn
XML files

```xml
<?xml version="1.0" standalone="no"?>
<graph>
  <description>
  The EGEE roll
  </description>
  <!-- The main node -->
  <edge from="server"> 
    <to>egee</to>
  </edge>
  <!-- Computing Element -->
  <order gen="kgen" head="TAIL"> 
    <tail>computing-element</tail>
  </order>
  <edge from="computing-element"> 
    <to>compute</to>
  </edge>
  <!-- Worker Node -->
  <edge from="worker-node"> 
    <to>compute</to>
  </edge>
  (...)
</graph>
```

```
<?xml version="1.0" standalone="no"?>
<kickstart>
  <description>
    Computing Element Node
  </description>
  (...)
  <package>glite-yaim-core</package>
  <package>glite-yaim-lcg-ce</package>
  <package>glue-schema</package>
  <package>gnu-crypto-sasl-jdk1.4</package>
  <package>gpt</package>
  <package>gridsite-shared</package>
  <package>lcg-CE</package>
  <post>
    <file name="/root/site-cfg/site-info.def">
      <eval>
        cat /home/install/site-cfg/site-info.def
      </eval>
    </file>
  </post>
</kickstart>
```
Direct Acyclic Graph
Frontend installation

- Rocks Base
- Scientific Linux C
- EGEE Roll
Configuration Screens

Welcome to Rocks

Help
- Fully-Qualified Host Name:
  This must be the fully-qualified computing element domain name
- IP Address:
  The Computing Element IP Address
- Torque Batch System:
  Use TORQUE batch system
- SGE Batch System:
  Use SGE batch system
- Condor Batch System:
  Use CONDOR batch system

Computing Element Configuration
- Fully-Qualified Host Name: ce.yoursite.com
- IP Address: 192.168.1.1
- Torque Batch System: 
- SGE Batch System: 
- Condor Batch System: 

Back  Next
Nodes Installation

- Run insert-ethers from the Frontend
Manual intervention

• After the installation of the Roll administrator must
  • Copy certificates into the frontend machine
  • Set site wide files according to site specificities
  • Use the insert-ether mechanism to install the nodes
    • To guarantee security
Civil Protection

Virtual Organization

Site Architecture
SITE Replication

- Civil Protection sites requirements
  - World wide
  - Interoperability
  - Full customisation
  - Reduced overall time for deployment
- Rocks frontend
  - Point-of-Presence (POP) for the each site
  - Central repository for the VO
  - WAN mechanism for site replication
Results

- Faster and easier installation process
  - Lower expertise requirements for sys administration
  - Automatic installation of multi-Worker nodes
- Centralised Management
  - Local management (users, computers)
  - VO management (homogenous sites)
UMINHO-CP

- Supports the investigation at UM's DI
- Testbed for the roll itself
- Support to Cross-Fire project
- Support to the VO's: CP and EELA
Further/Current work

- Installation and configuration of MPI
- Update to latest gLite version
- Inclusion of AMGA appliance and DenyHosts package
- Creation of a command line tool for EGEE management
Questions?