

InGrid : Installing GRID

F. M. Taurino¹, R. Esposito², G. Tortone²

¹INFM, Unita' di Napoli, Italy

²INFN, Sezione di Napoli, Italy

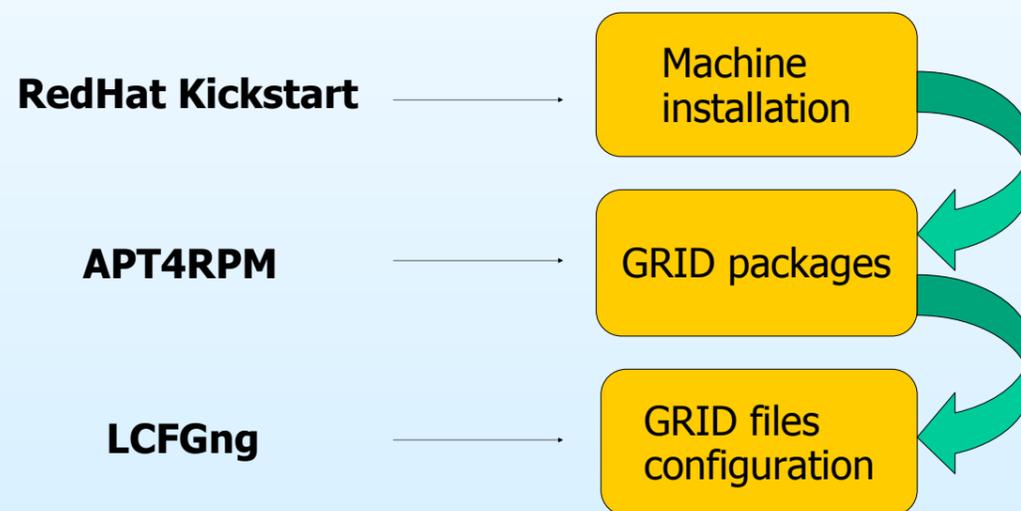
Introduction

The "gridification" of a computing farm is usually a complex and time consuming task. Operating system installation, grid specific software, configuration files customization can turn into a large problem for site managers...

Introducing InGRID

A solution used to install and maintain grid software on small/medium size computing farms

- First step: Nodes are installed using RedHat Kickstart
- Second step: Grid specific software is integrated using apt4rpm
- Third step: Grid configuration files are customized through LCFGng



Machine Installation: Kickstart

Many system administrators would prefer to use an automated installation method to install Red Hat Linux on their machines. To answer this need, Red Hat created the kickstart installation method. Using kickstart, a system administrator can create a single file containing the answers to all the questions that would normally be asked during a typical Red Hat Linux installation.

Kickstart files can be kept on single server system and read by individual computers during the installation. This installation method can support the use of a single kickstart file to install Red Hat Linux on multiple machines, making it ideal for network and system administrators.

Kickstart lets you **automate** a Red Hat Linux installation.

Using kickstart, a system administrator can easily manage hard disk partitions, base software installation, services to be started/stopped at reboot, and can also execute some simple pre and post installation scripts.

GRID packages Installation: APT4RPM

APT is a system created in the Debian community to automatically manage the packages dependencies. It can install, remove and upgrade packages, managing dependencies and downloading needed rpms when necessary. It's a frontend to other tools, and it uses the underlying package management system, like the rpm commands on a RedHat distribution. It's able to fetch packages from several media (cdrom, ftp, http, nfs), and it can be used to create ad-hoc software repositories. An APT repository consists in a directory containing rpm packages and a file which describes the dependencies between them. This file is generated with a specific APT command (genbasedir).

The repository can then be exported to the apt clients via nfs, http or ftp.

With a simple script (few shell lines), a system administrator can install any type of grid element, each one with a different set of rpms.

GRID files configuration: LCFGng

LCFGng (Local ConFiGuration system – Next Generation), is a tool originally designed in the Department of Computer Science (now the School of Informatics) at Edinburgh University.

LCFG provides a configuration language and a central repository of configuration specifications, from which individual Unix machines can be automatically configured. Changes to the central specification automatically trigger corresponding changes in the actual configuration of individual nodes.

With InGRID, the LCFGng components on the installation server are used only to setup GRID specific files, while the base clients subsystems are configured using Kickstart.

In the near future, we are going to study **Cfengine** as a replacement for LCFGng to configure Grid files. Cfengine, or the configuration engine, is an autonomous agent and a middle to high level policy language for building expert systems which administrate and configure large computer networks.

The InGRID server

Setting up an InGRID server is an easy task:

- Install a standard RedHat 7.3 machine
- Install and setup the nfs and the http server
- Mirror via rsync the InGRID software repository from our server (<http://ingrid.na.infn.it>)
- Install the APT rpm, the LCFGng utils and example configuration files
- Configure the appropriate files for your grid elements

then

Kickstart your GRID farm with InGRID!

The system is actually used to install and configure 2 GRID farms in the INFN site in Naples, using the GRID-IT middleware software (based on Globus, VDT, LCG2).