

'G.A.P' project: une Grille pour les AstroParticules



Overview

- Astroparticle computing at APC
- What is the computing grid ?
- GAP Applications

- The APC test node and its components
- The APC test node in GRIF (Grille Ile de France)

- The project planning



Astroparticle computing at APC

Specificities of Astroparticle computing: different data and different needs

- - data can be 1D or 2D: time series (Auger, Hess, Virgo) vs. sky map (Planck, Hess also)
- - large volume or small data set: from TB to 100 TB
- - different processing task: event detection or image processing
- in all cases, we need lots of CPU

(this is also true for our theoretician colleagues computationally limited by their workstation)

- --> flexible tool to access easily parallel computing <--

A Computing Grid

Scientific applications produce a large data volume

+

International collaborations with users all over the world



E-Science Grid:
Interconnect via
network (RENATER,
GEANT) computing
infrastructure

to access to CPU and
storage data
distributed by
differents nodes (or
laboratories)

20/07/07

ALICE WORKSHOP
M. Detournay - APC

Main E-Science Grid Projects

- NORDUGRID



- DEISA



- EGEE and LCG project

CERN

.... IN2P3 FNAL

GRIF

APC DAPNIA LAL LPNHE IPNL+CSNSM



astroparticle grid applications

- Astroparticle grid applications at APC:
 - UHECR (Ultra high Energy Cosmic Rays) e.g. Auger Observatory, Super EUSO etc....
 - Cosmology (Planck, etc...)
 - Gravitational waves (Virgo, Lisa, etc..)
 - Gamma Astronomy (Hess, CTA,etc..)



HESS/EU/Africa

Characteristic of the astroparticle applications:

Various software standard (Particle physics, Astrophysics, high energy, low radioactivity, etc.)

e.g. (events, image) -> specific event definition, local or global sky map, images, etc.

Application needs :

- often RAM size > 4 Go
- sometimes MPI computing



The Test node at APC

Why a test node at APC? : A prototype

- to experiment e-science grid via the infrastructure of GRIF (Grille Ile de France)
- to implement flexible management tools in real conditions.

The method:

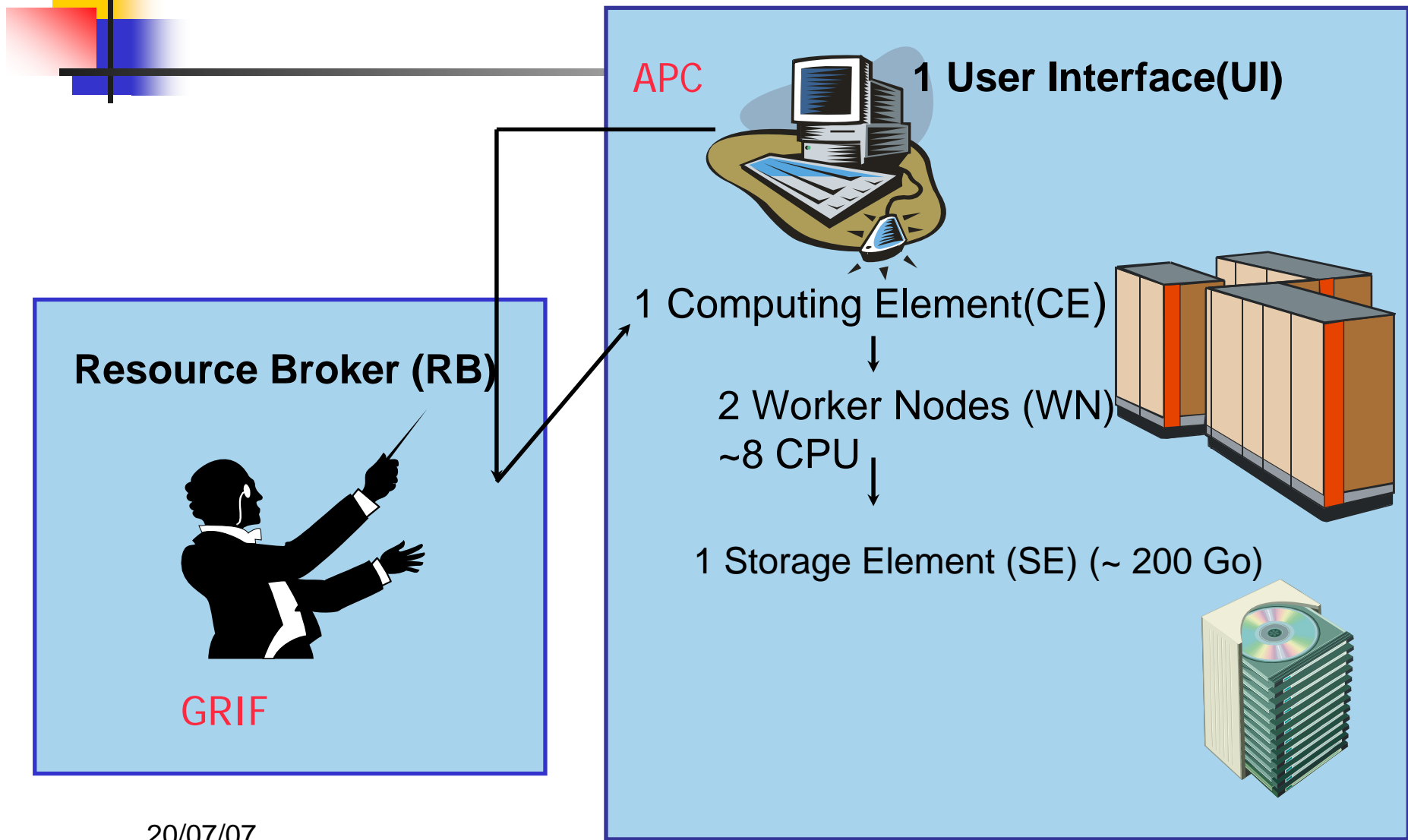
Software experimentation for astroparticle Applications.

- Creation of the APC 'virtual organisation' named: vo.apc.univ-paris7.fr
- software and libraries packages definition for the applications
- submission job procedure definition

The aim:

After validation and software management definition: installation of a production node

Test node components



APC Test node in GRIF project:

Monitoring Website portal for EGEE nodes

show ops critical tests
 Sort by: SiteName
 ShowSensorTests

NOTE	important information	0
<input checked="" type="checkbox"/> WARN	subject may fail soon	2
<input checked="" type="checkbox"/> ERROR	subject has failed and problem is localized	1
<input checked="" type="checkbox"/> CRIT	subject has failed and problem is fatal	0
<input checked="" type="checkbox"/> MAINT	subject is under maintenance	1

ops	CT
js	Software Version (WN)
ver	CA certs version
ca	BrokerInfo
bi	CSH test
cs	Replica Management
rm	Test if the service host certificate is valid.
cert	

No	RegionName	SiteName	NodeName	Status	ops						
					js	ver	ca	bi	cs	rm	cert
1	France	AUVERGRID	iut15auvergridce01.univ-bpclermont.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
2	France	AUVERGRID	iut43auvergridce01.univ-bpclermont.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
3	France	AUVERGRID	obsauvergridce01.univ-bpclermont.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
4	France	CGG-LCG2	ce1.egge.fr.cgg.com	WARN	ok	3.0.2	warn	ok	ok	ok	ok
5	France	GRIF	apcpc79.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
6	France	GRIF	grid10.lal.in2p3.fr	OK	ok	3.1.0	ok	ok	ok	ok	ok
7	France	GRIF	ipnls2001.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
8	France	GRIF	lpnce.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
9	France	GRIF	node07.datagrid.cea.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
10	France	GRIF	polgrid1.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
11	France	IN2P3-CC	cclcgceli01.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
12	France	IN2P3-CC	cclcgceli03.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
13	France	IN2P3-CC	cclcgceli04.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
14	France	IN2P3-CC-T2	cclcgceli05.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
15	France	IN2P3-CPPM	marseillece01.mrs.grid.cnrs.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
16	France	IN2P3-IPNL	lyogrid02.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok
17	France	IN2P3-IRES	sbgce1.in2p3.fr	WARN	ok	3.0.2	warn	ok	ok	ok	ok
18	France	IN2P3-LAB	lannce01.in2p3.fr	OK	ok	3.0.2	ok	ok	ok	ok	ok

• GRIF

- APC
- LAL
- IPNO + CSNSM
- LPNHE
- LLR



GAP Schedule

April - June. 2007:

Funding for production node (~ 100 k€) to various programs:

- Astroparticle program
- P2I (Physique des 2 infinis)
- ESCO (European Science Computing Organisation)

June - Nov. 2007:

- Optimization of job submission and job running
- definition of the applications package for the VO APC.
- End of hardware structure building of the test node -
- Interface with some astroparticle collaboration(Hess, Auger, Planck...)

Dec 2007-Fev. 2008:

Installation of the production node GAP at APC

- APC node: ~ 100 CPU and 10 TB
- Which takes place in GRIF: ~500 CPU and 50 TB