WLCG Asia-Pacific Workshop

Site Report
IN-DAE-VECC-01

Tapas Samanta, ALICE-Tier-II, Kolkata, India

December 2, 2006

Worldwide LHC Computing Grid
Distributed Production Environment for Physics data Processing

Overview

- ALICE, India
- Grid Services
  - BDII, CE, SRM-enabled SE, ...
  - LFC, VO-boxes (both local (e.g. ALICE) and remote (e.g. ATLAS)
  - 3D services (SQUID, local MySQL or other DB services)
- Present Resources
  - O/S; Middleware; Hardware (CPU, Disk, Tape)
  - Status; Development Participation ; Support & Operations Staff
  - Expertise & Outlook; Issues & Concerns
- Fabric Design & Management.
  - Hardware Configuration; System Management; Tips &Techniques;
  - Open Issues &Concerns
- Participation to date
  - Activities; Results; Issues
- Participation in Remainder of 2006 / 2007
  - Milestones; Deliverables
- Some Specific Queries

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Experiments

- ## ALICE, India

    - A Tier-II center for ALICE. The PMD group & the Muon-Arm group are developing the PMD & Muon-Arm detectors, respectively, to be used in ALICE.

    - Supporting 7-8 Tier-III/IV centers, which are collaborating in the detector development
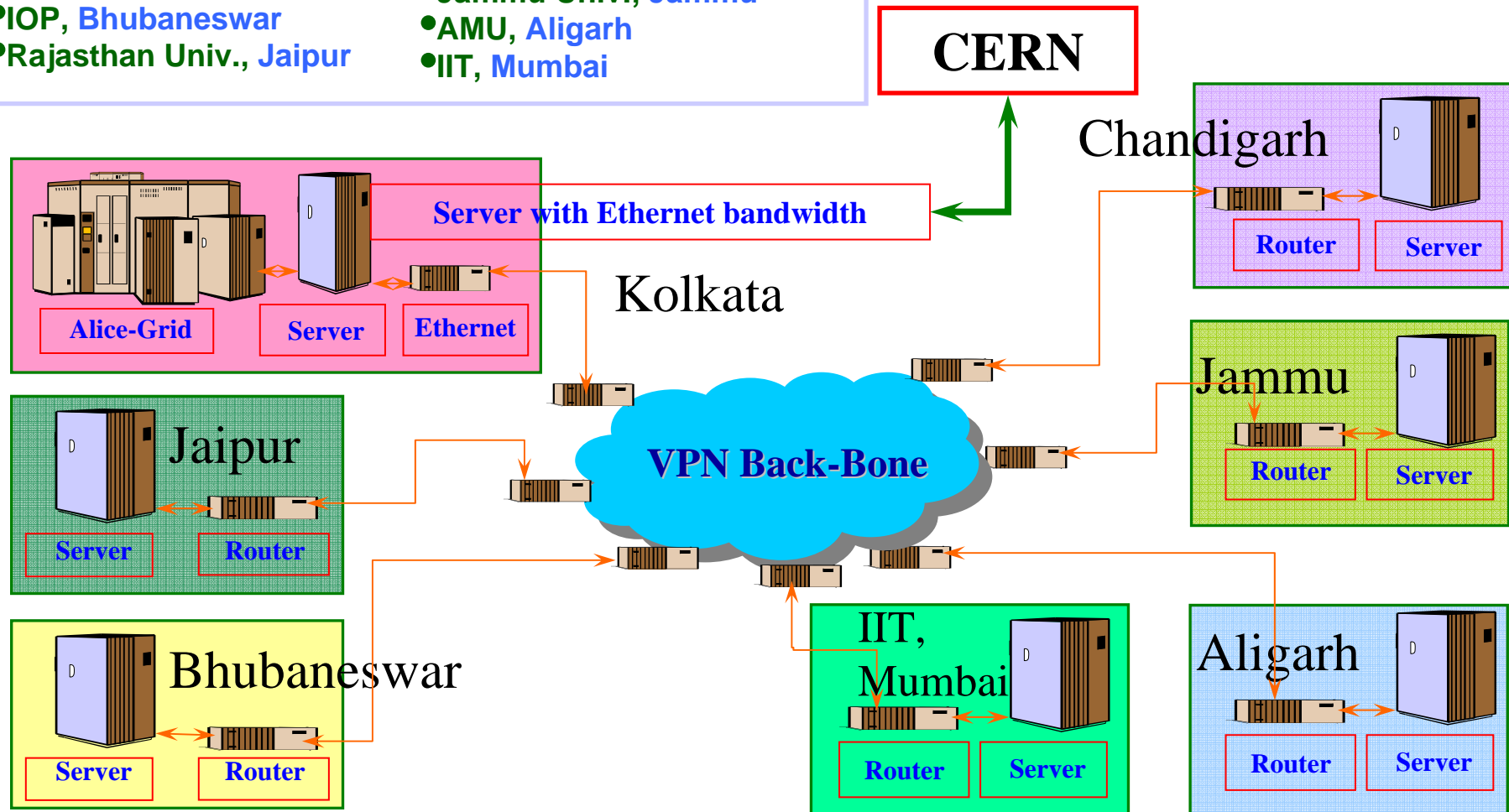
ALICE Setup

Indian contribution to ALICE : PMD, Muon Arm

ALICE-GRID Project, India

WLCG - Tier2

Indian ALICE Collaborators

- VECC - Kolkata
- SINP - Kolkata
- IOP, Bhubaneswar
- Rajasthan Univ., Jaipur

- Panjab Univ., Chandigarh
- Jammu Univ., Jammu
- AMU, Aligarh
- IIT, Mumbai

CERN

Chandigarh

Router | Server

Server with Ethernet bandwidth

Kolkata

Alice-Grid | Server | Ethernet

Jammu

Router | Server

VPN Back-Bone

Jaipur

Server | Router

Bhubaneswar

Server | Router

IIT, Mumbai

Router | Server

Aligarh

Router | Server

Grid Services

- ## BDII, CE, SRM-enabled SE...
  - ### Site Offers
    - Site-BDII / gLite-MON
    - gLite-CE
      - Torque based Batch System
      - CONDOR (earlier, not offered at the moment)
    - SRM-enabled SE(DPM)

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Grid Services

- **LFC**
  - Only for ALICE (i.e. Local LFC)

- **VO-boxes**
  - For AliEn, Dteam and OPS VOs

- **3D services (SQUID, local MySQL or other DB services)**
  - Only local MySQL
    - For LFC as well as for DPM

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Present Resources

- **Operating System**
  - Scientific Linux 3.05
- **Middleware**
  - gLite 3.0
  - AliEn
- **Hardware (CPU, Disk, Tape)**
  - 13xDuel Xeon,4GB + 8xDuel Xeon,2GB WNs
  - 4xDuel Xeon, 4GB LCG/AliEn Servers
  - 4 TB Disk
  - 12TB Tape Backup
- **Bandwidth**
  - 34Mbps dedicated
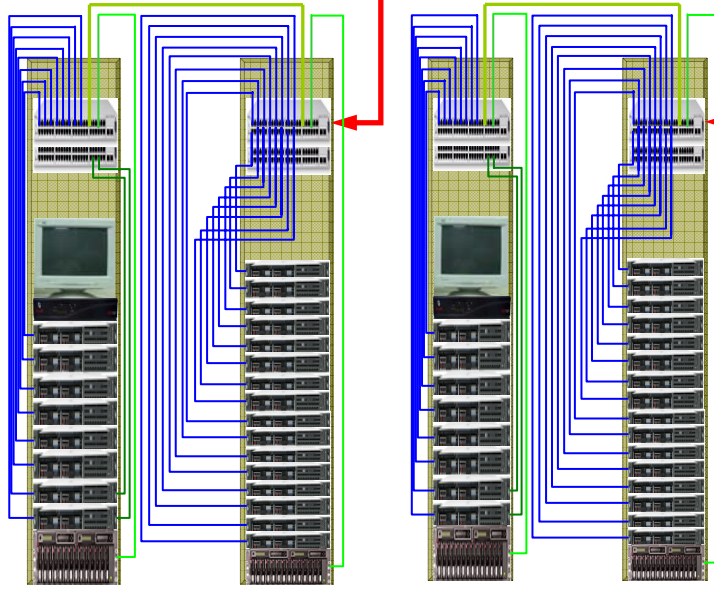
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Development Participation

LCG-AliEn-SE Interface using GridFTP

Status:

The project has been successfully completed

Milestones of the Project were as follows :

✓ **Test Bed Installation for Grid Environment**
  The configuration consists of one central server and two Sites.

✓ **Certification Authority Server has been installed**
  A simple certification authority has been installed to generate certificates for authentication purpose.

✓ **Installation of GridFTP Library under AliEn**
  The GridFTP daemon *in.ftpd* has been used as server and *globus-url-copy* has been used as client

✓ **Development of AliEn-SE Interface via GridFTP**
  These newly developed modules along with necessary GridFTP libraries and changes made in existing AliEn Code have been committed to CVS Server at CERN.

Quality Assurance & Test Environment For AliEn-ARDA Prototype

The Project has been successfully completed.

Milestones of the Project were:

✓ **Exploration and Design of Test Scripts using perl.**

✓ **Implementation of Test Scripts for each Individual perl sub-module of AliEn.**
  Individual perl sub-modules of AliEn code were tested for proper functionalities. It Generates a detailed report of the tests and maintains a log.

✓ **Validation of Test-Scripts and Procedures.**

✓ **Testing Modules with perl Harnessing Environment.**
  The Complete Suit was used at CERN under perl Harnessing Environment for testing AliEn online and generating online consolidated report of the test.

✓ **Inline Documentation to the extent possible.**

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Development Participation

Addendum –5 Completed
Valuation: 1,50,000CHF

Stages	ManMonth	Estimated Schedule	Actual Schedule
I, II	3	July 1st to August 31st	July 1st to August 31st
III, IV	5	September 1st to November 15th	September 1st to November 15th
V, VI, VII	4	November 15th to January 31st 2004	November 15th to December 18th 2003
Total	12	July 1st 2003 to January 31st 2004	July 1st to December 18th 2003

Addendum-6 Completed
Valuation: 1,50,000CHF

Stages	ManMonth	Estimated Schedule	Actual Schedule
I, II, III	3	December 23rd 2003 to January 2nd 2004	December 23rd 2003 to January 2nd 2004
IV, V	6	January 3rd to March 15th	January 3rd to March 15th
VI, VII	3	February 15th to March 31st	February 15th to March 31st
Total	12	December 23rd 2003 to March 31st 2004	December 23rd 2003 to March 31st 2004

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Support & Operations Staff

- **Support Staff**
  - One FTE
- **Operation Staff**
  - Two FTE

Expertise & Outlook

- **Expertise**
  - Expertise in AliEn & gLite Middleware.
  - Contribution to the AliEn-LCG development by completing two related-projects
  - Good Knowledge on the Fabric-Management & the Middleware Installation

- **Outlook**
  - Regular Training/Technical Updates
  - TD Room by 24x7 around the globe
  - Participation in future development of Middleware/Applications
  - Participation in Tier-II FTS
  - Participation in SC

Issues & Concerns

- Issues
  - Patch/Version Updates (Automatic/Manual?)
  - Restricting users running jobs irrelevant (?) to VO
  - AliEn services and VO services on same server(?)
  - Global Time Synchronization(UTC standard)

- Concerns
  - Security Updates
  - Local Security Measures
  - Intrusion Detection System & User Monitoring

Site Design & Management

Site Preparation
- Flooring
- Power Cabling

Cooling & Safety
- Cooling Arrangement
- UPS Distribution
- Fire–Alarm & Safe System

Hardware

Open Source
- SLC 3.05
- ~~OSCAR~~
- Quattor
- Secure Shell

Software

Fabric
- Firewall
- Ganglia & C3
- LCG Middleware
- AliEn Middleware
- ALICE Packages
- Application

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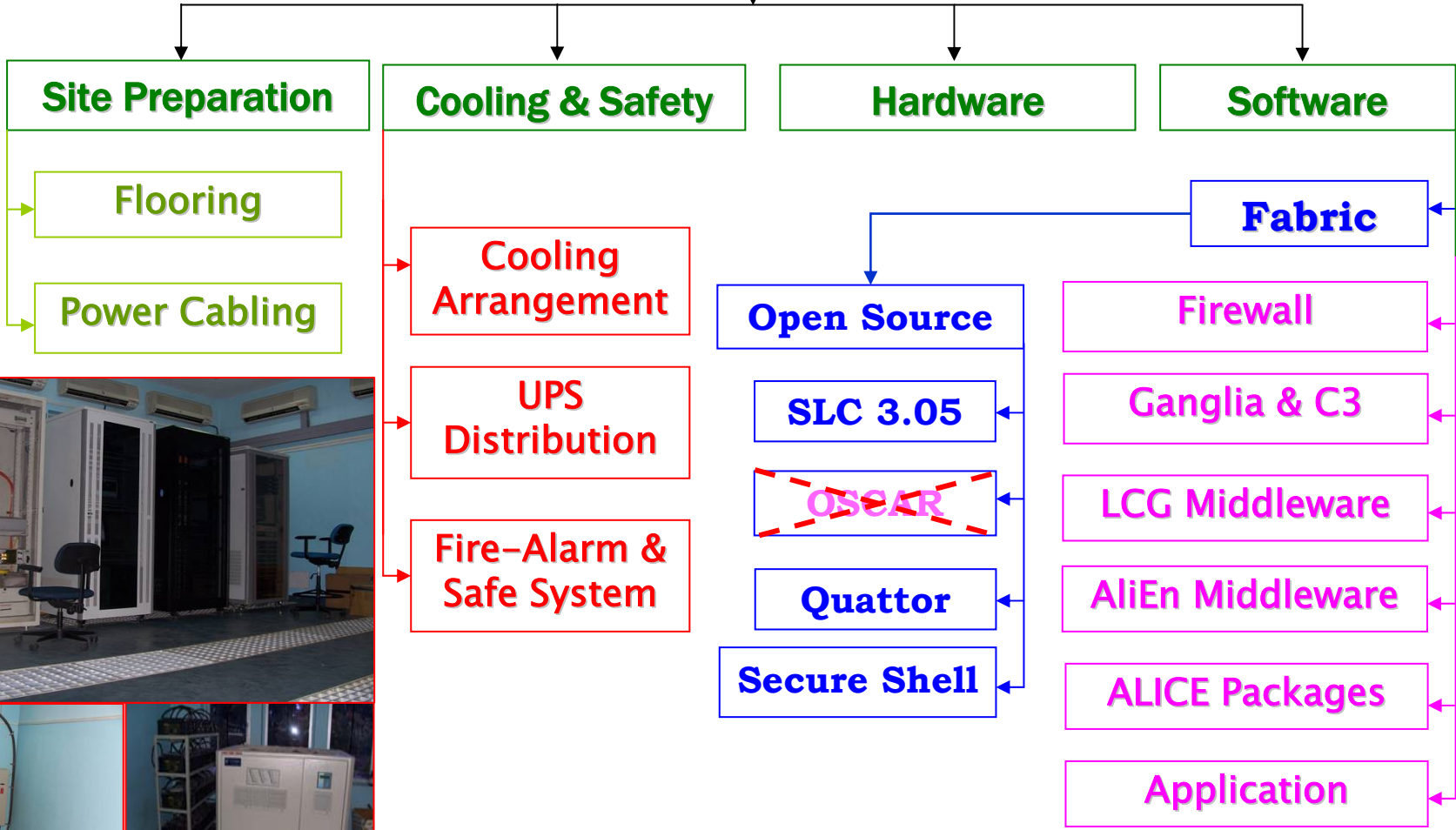
Fabric Design & Management

- **Hardware Design/Selection**
  - Site Server (CE, SE, VOBOX, LFC,MON etc.)
    - RAM   -   8GB or More
    - Processor   -   Dual 64 bit
    - Cache   -   2MB (per processor)
    - Preferable   -   Single Service per server
  - Worker Node
    - RAM   -   4GB
    - Processor   -   Duel 32/64bit
    - Storage (Scratch-pad) -   5GB/Processor in /var
                             -          5GB/Processor in /tmp

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Fabric Design & Management

- ## System Management
  - ### – Fabric Management
    - #### • Quattor

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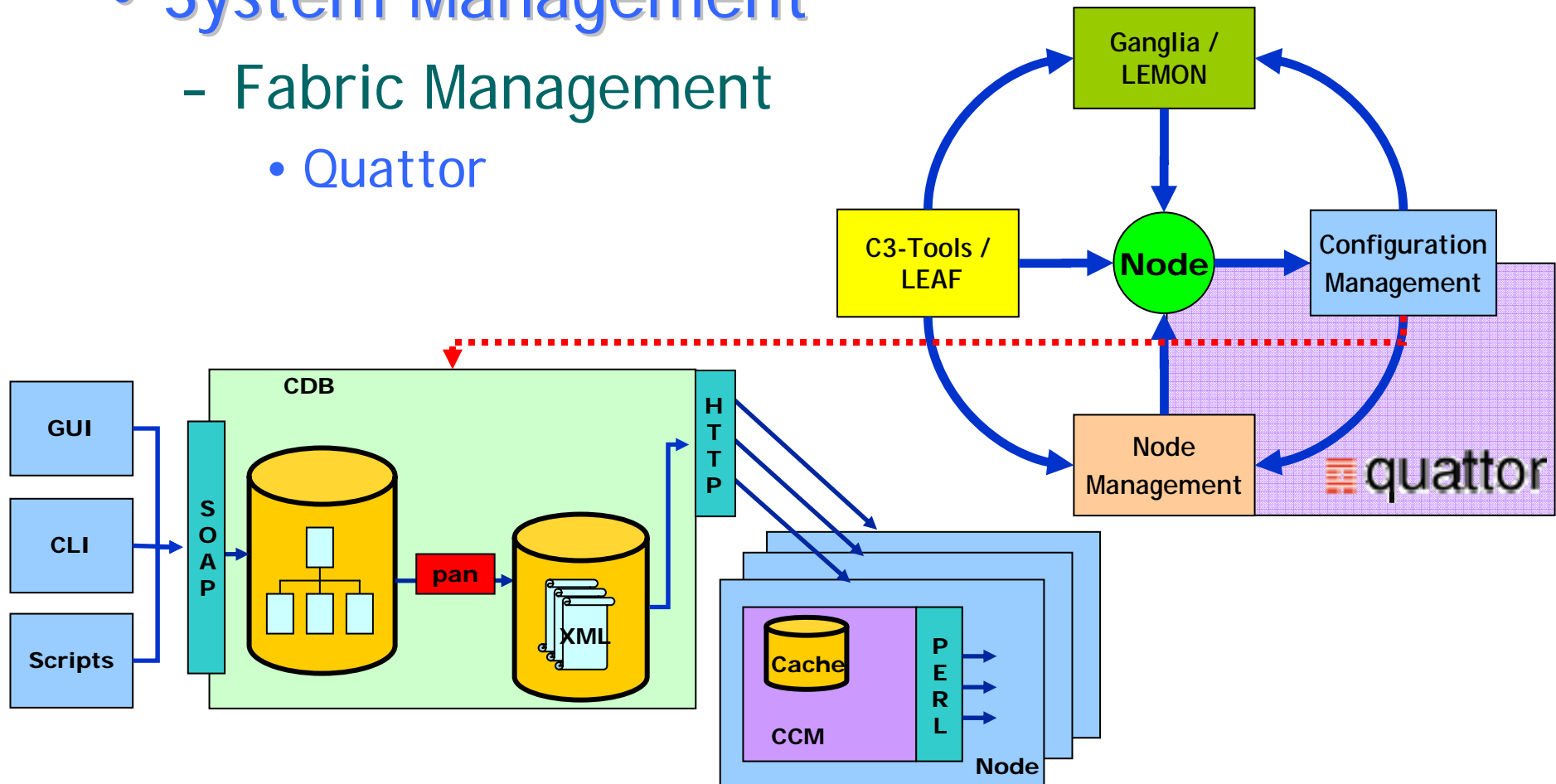
Fabric Design & Management

- ## Tips & Techniques
  - gLite Middleware by YAIM
  - AliEn Middleware by separate GUI
  - Quattor shouldn't be used for gLite / AliEn related upgrade till the packages freeze *(otherwise it may contradict with the node configuration and roll-back.)*
  - Quattor support for SCSI Disk(??)
  - Static IP allocation dynamically(??)

Fabric Design & Management

- ## Open Issues & Concerns
  - gLite rpms for individual services
  - AliEn rpms for individual services
  - Role-Back Procedure
  - Strong Firewall
  - Service Redundancy

Participation to date

- Activities PDC04

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Participation to date
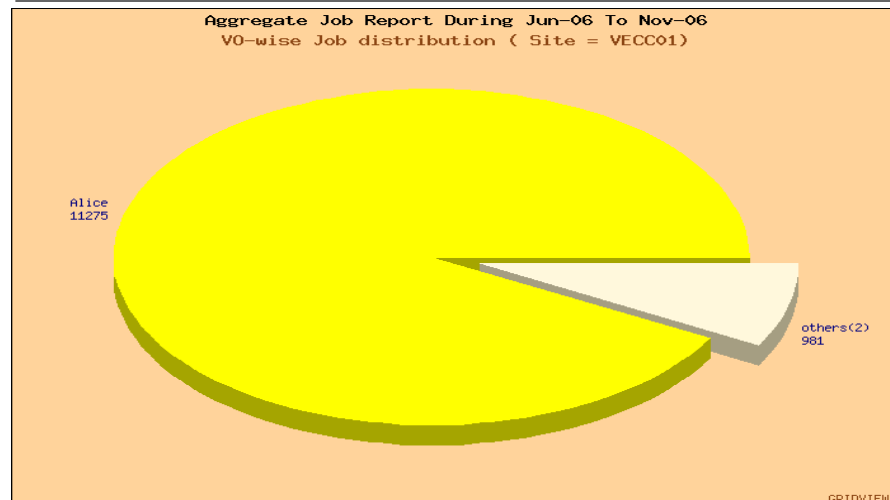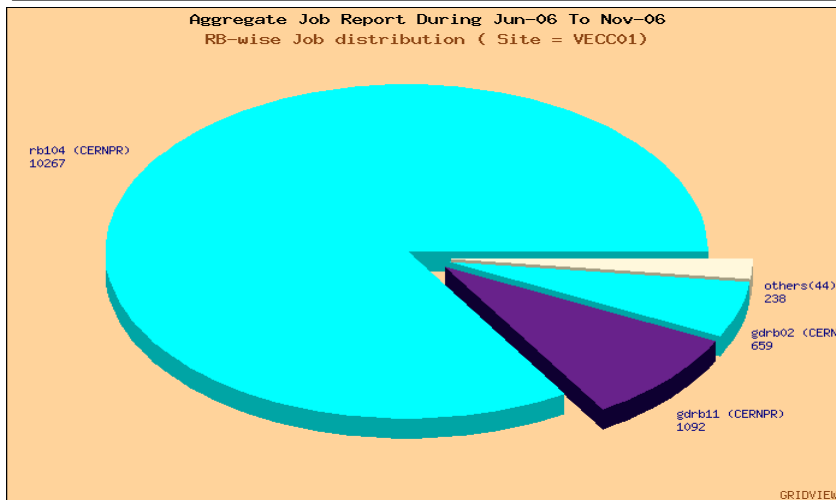
- ## Activities PDC06

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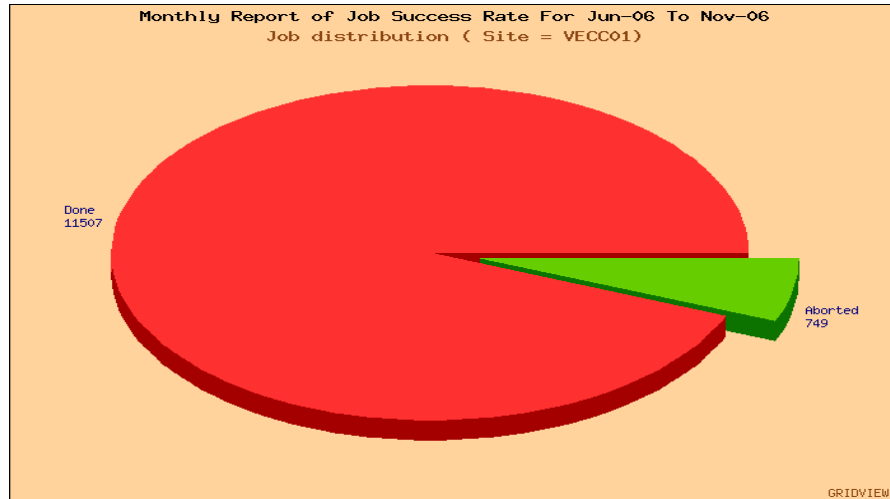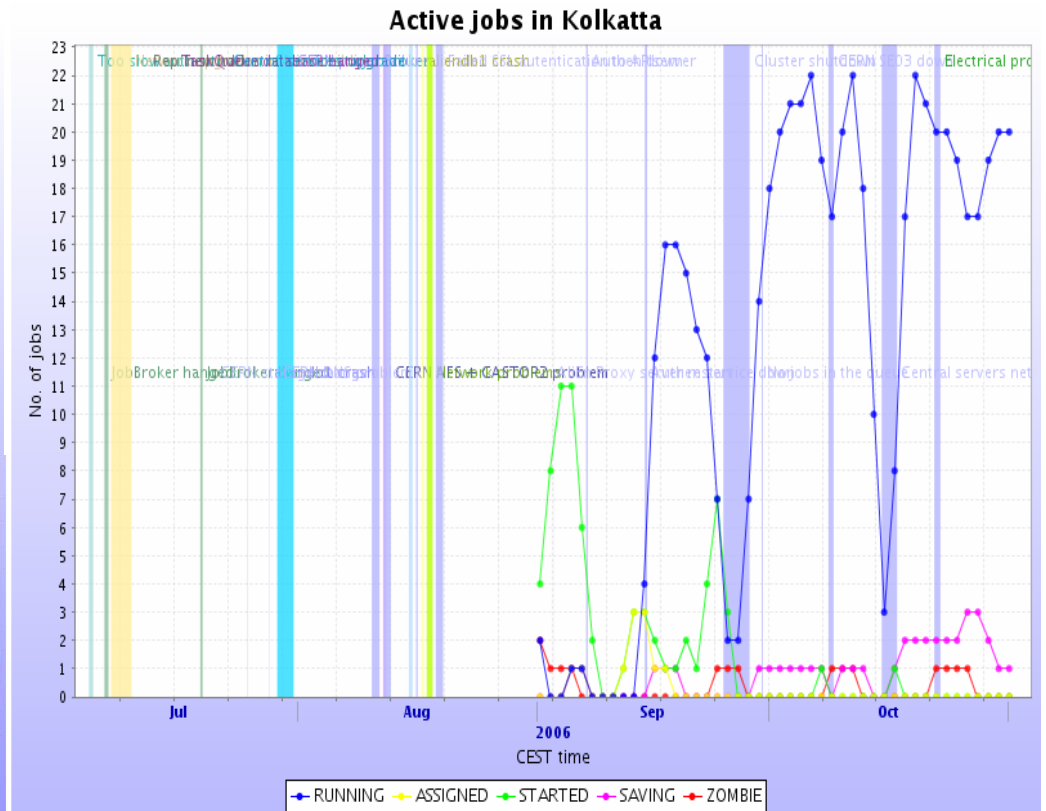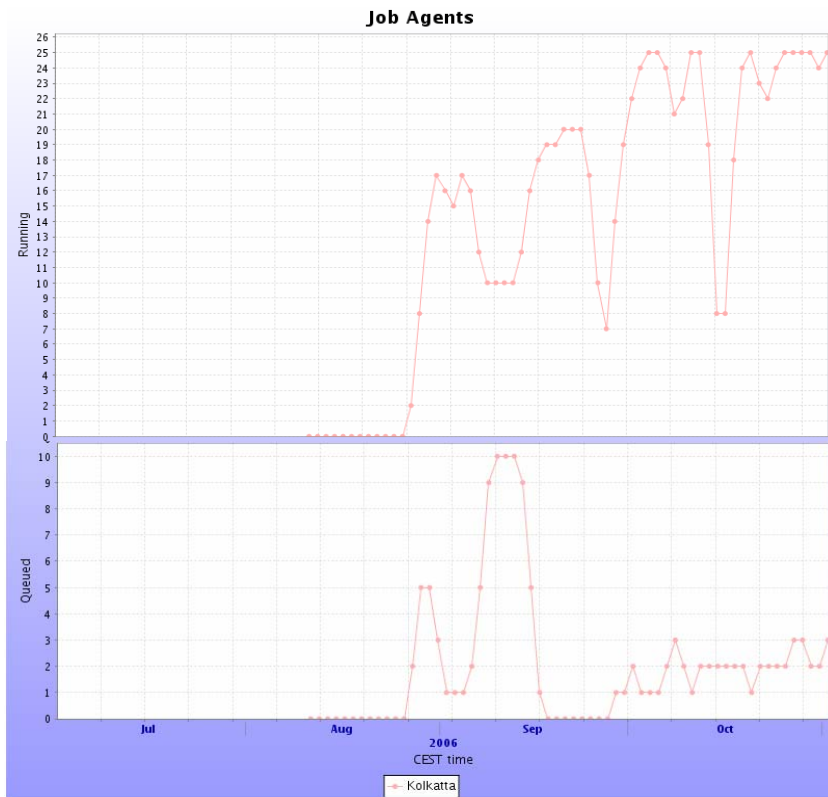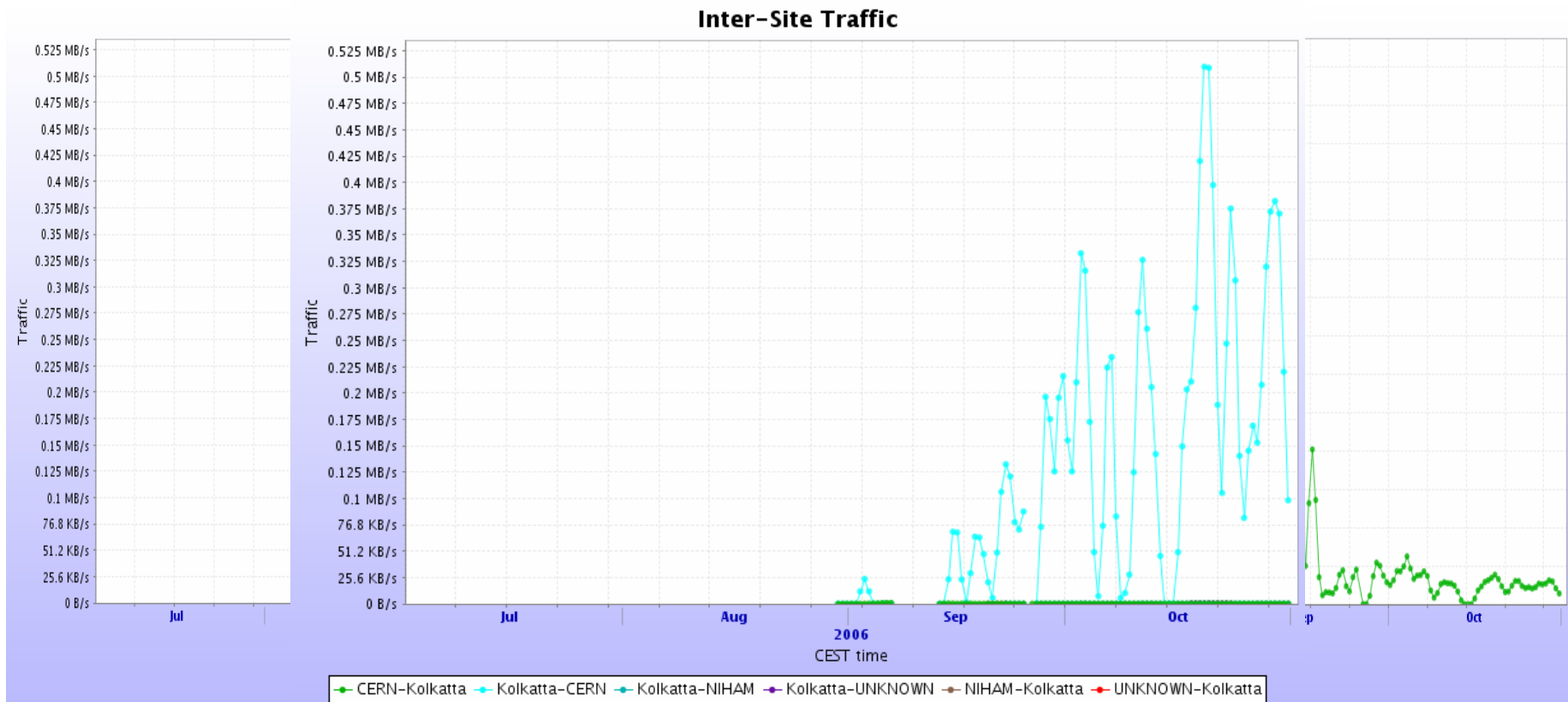
Participation to date

- **Activities**

Participation to date

- **Activities**

Aggregate Job Report During Jun-06 To Nov-06
Month-wise Job distribution (Site = VECC01)

Sep-06 2226
Aug-06 1165
Oct-06 5326
Nov-06 3539

GRIDVIEW

Monthly Report of Job Success Rate For Jun-06 To Nov-06
Job distribution (Site = VECC01)

Done 11507
Aborted 749

GRIDVIEW

Aggregate Job Report During Jun-06 To Nov-06
RB-wise Job distribution (Site = VECC01)

rb104 (CERNPR) 10267
others(44) 238
gdrb02 (CERNPR) 659
gdrb11 (CERNPR) 1092

GRIDVIEW

Aggregate Job Report During Jun-06 To Nov-06
VO-wise Job distribution (Site = VECC01)

Alice 11275
others(2) 981

GRIDVIEW

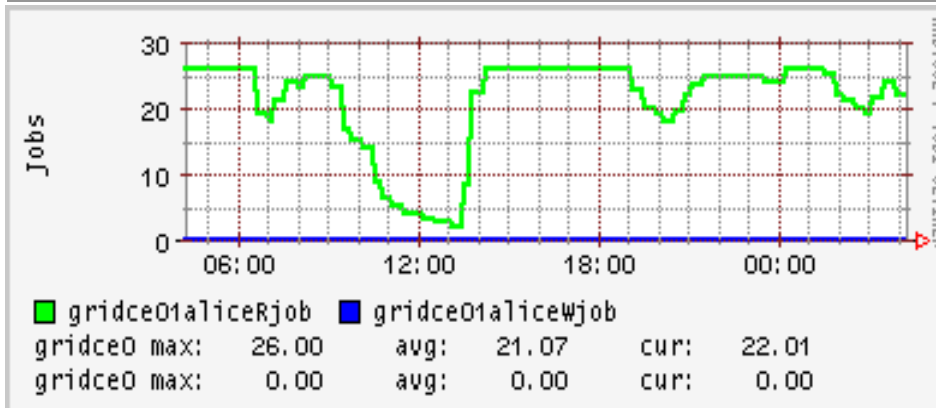Tapas Samanta, ALICE-Tier-II, Kolkata, India

Participation to date

- ## Activities

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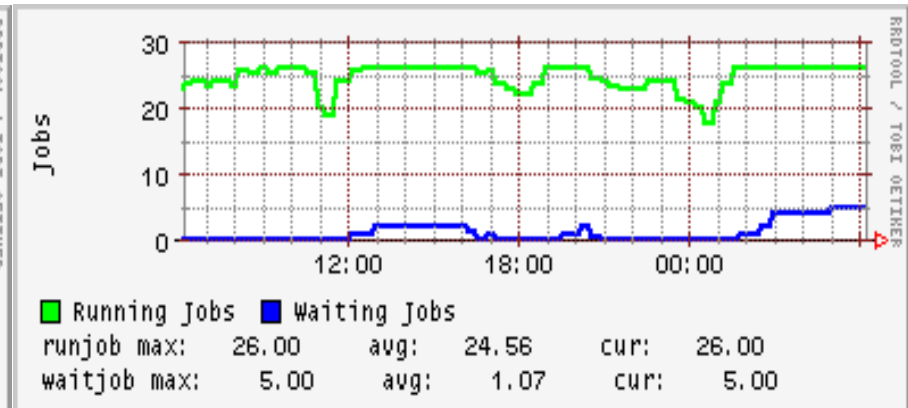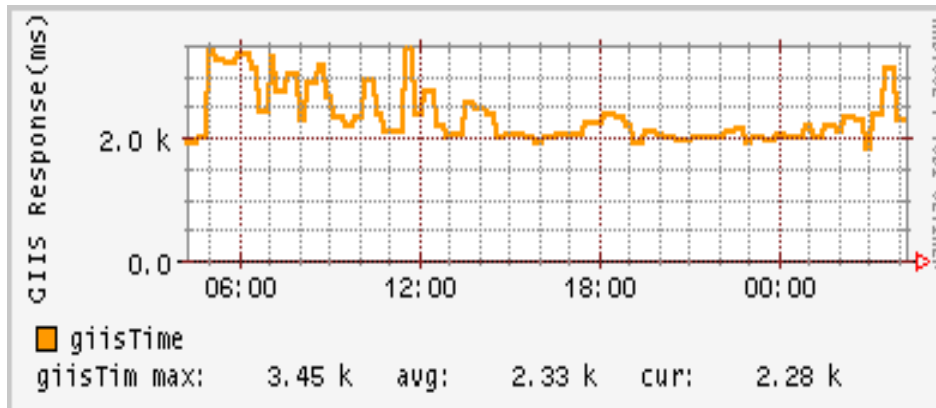
Participation to date

- ## Activities

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Participation to date

- **Testing & Monitoring under the Asia-Pacific ROC Umbrella**

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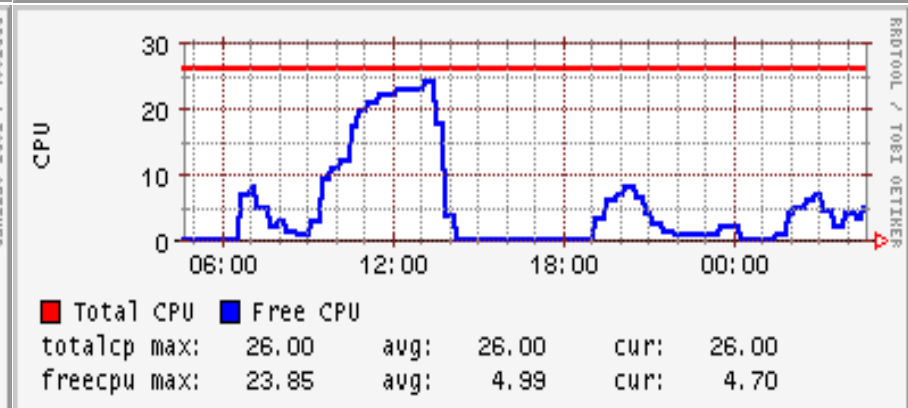
Participation to date

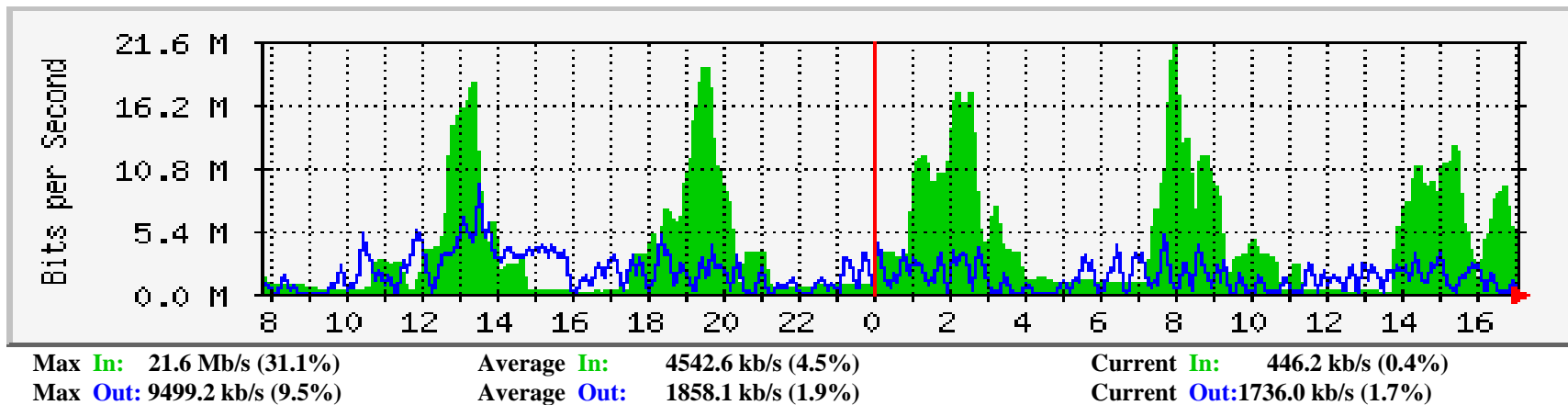- ## Issues
  - Server Resources
  - Utilization of Continuous Bandwidth
  - 24x7 Discussion Room

Max **In:**	21.6 Mb/s (31.1%)	Average **In:**	4542.6 kb/s (4.5%)	Current **In:**	446.2 kb/s (0.4%)
Max **Out:**	9499.2 kb/s (9.5%)	Average **Out:**	1858.1 kb/s (1.9%)	Current **Out:**	1736.0 kb/s (1.7%)

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Participation in Remainder of 2006 / 2007

- **Milestones**
  - Putting all Tier-III/IV online to Grid
  - Active Participation by the users from ALICE India Tier-II/III/IV centers through online Job Submission & Analysis
  - Participation in FTS
- **Deliverables**
  - Upgraded Server Resources
  - Scaled-Up Cluster Size
  - Increased Bandwidth to at least two folds
  - Scaled-Up Disk-Space
  - Online Tape-Library

Thank You All........

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