A Large Ion Collider Experiment

ALICE

PK-CIIT
Grid Operations in Pakistan
COMSATS

Ali Zahir
Site Admin / Faculty Member

COMSATS Institute of Information Technology, Islamabad

COMSATS

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ALICE

- A Degree Awarding Institute of higher education established in April 1998 as a Centre of Excellence of the Commission on Science and Technology for Sustainable Development in the South (COMSATS)

- Chartered in August 2000

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Progress at a Glance

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Milestones	2000	2013
Campuses	1	8
Research Centers	0	7
Student Enrolment	277	27,029
Faculty Strength	15	2,394
Academic Programs	3	86
Graduates	-	24,857
Operating Budget	Rs. 64 M	Rs. 4,065 M
Development Budget	Rs. 36 M	Rs. 1,076 M
Ranking	-	4th in Overall 3rd in Research

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No. 1 Rank in Pakistan in Computer Science / IT

No. 3 Rank in Pakistan in International Research Publications

No. 4 Rank in Pakistan in Larger Universities League

Vision 2020 (seen in 2002)

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By 2010

National Character

Presence in all Provinces of Country

Among Top 5 National Universities

Science led Engineering

By 2015

Among Top 100 Universities of Developing World

Social Sciences

By 2020

Among Top 500 Universities of the World
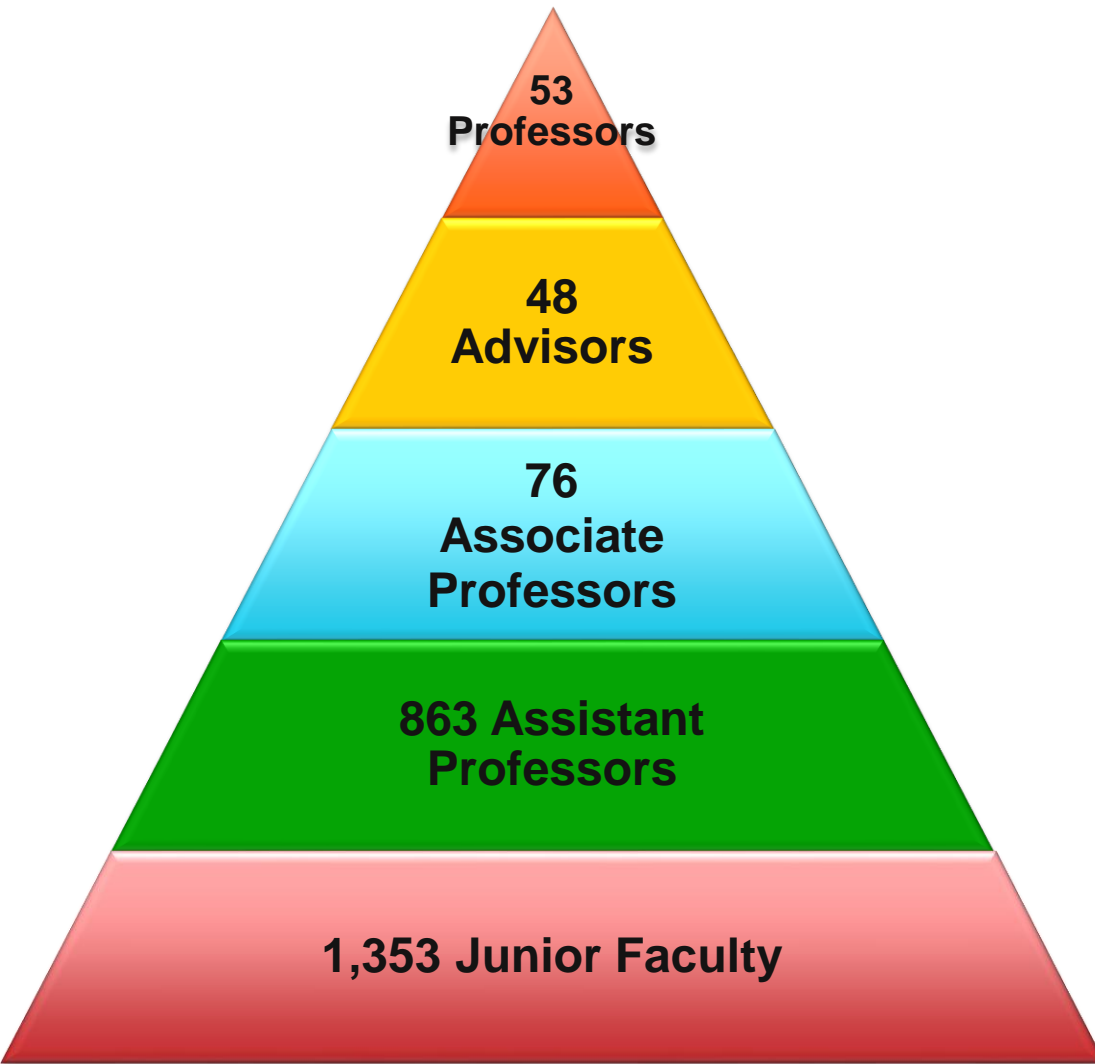
Medical + Biological Sciences

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Total Faculty: 2,393 (Designation-Wise)

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53 Professors

48 Advisors

76 Associate Professors

863 Assistant Professors

1,353 Junior Faculty

Male: 77%
Female: 23 %

PhDs: 658
MS: 1,093

International Faculty: 32

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Lancaster University, UK

University of Illinois, Urbana Champaign, USA

University of North Dakota, USA

Graduate School of Chinese Academy of Sciences (GSCAS), Beijing

Tsinghua University, China

Peking University, China

EPFL

University of Malaya, Kuala Lumpur, Malaysia

University of Technology, Petronas, Malaysia

University of Technology, Malaysia
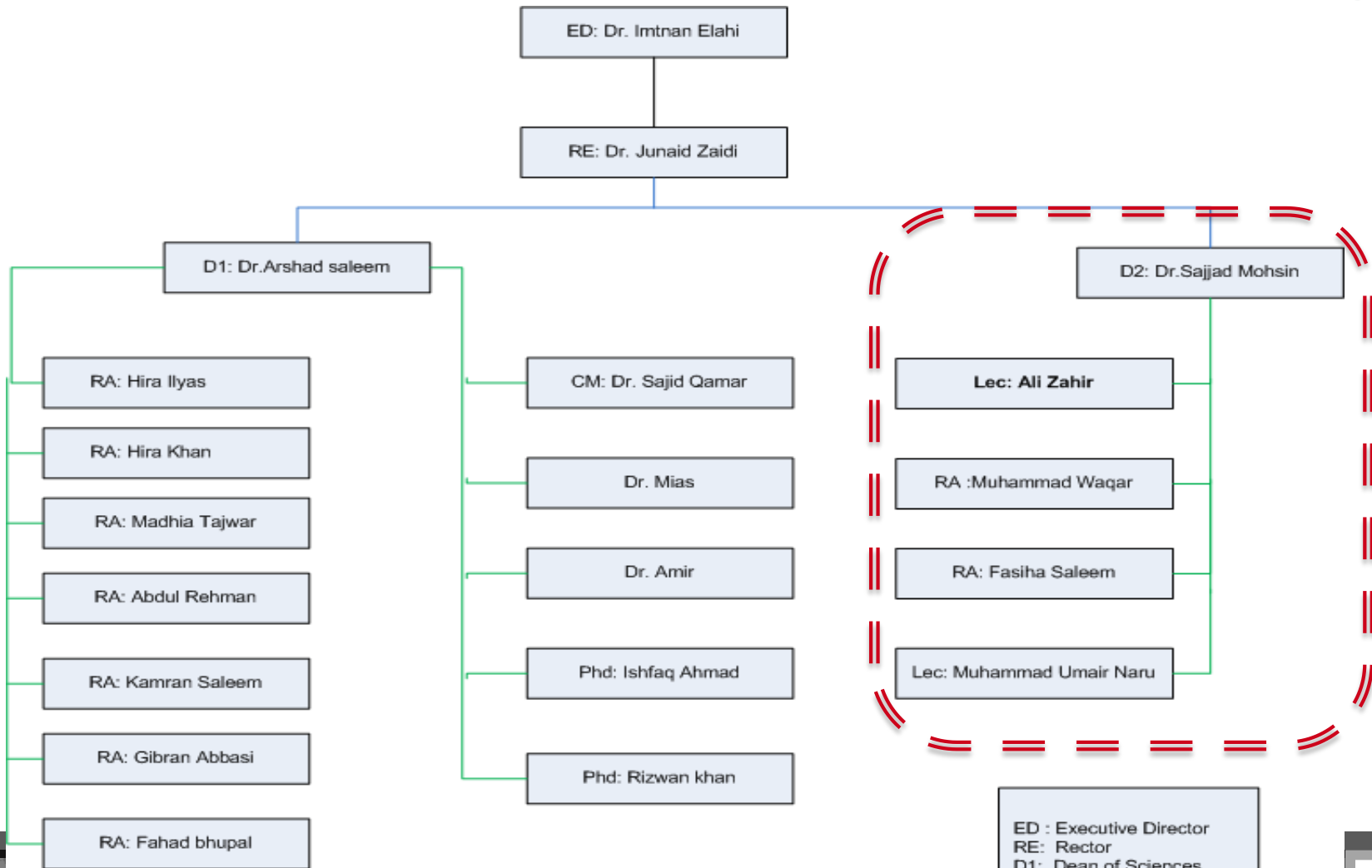
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- ➲ ALICE-COMSATS collaboration started in 2009.
- ➲ Association revolves around two Fields:
  - ➲ Study of the production of heavy flavor particles
  - ➲ Distributed / GRID Computing
- ➲ Our aim was to acquire a Tier-2 recognition by having reasonable hardware and bandwidth

ALICE Team Structure

ED: Dr. Imtnan Elahi

RE: Dr. Junaid Zaidi

D1: Dr.Arshad saleem

D2: Dr.Sajjad Mohsin

RA: Hira Ilyas

RA: Hira Khan

RA: Madhia Tajwar

RA: Abdul Rehman

RA: Kamran Saleem

RA: Gibran Abbasi

RA: Fahad bhupal

CM: Dr. Sajid Qamar

Dr. Mias

Dr. Amir

Phd: Ishfaq Ahmad

Phd: Rizwan khan

Lec: Ali Zahir

RA :Muhammad Waqar

RA: Fasiha Saleem

Lec: Muhammad Umair Naru

ED : Executive Director
RE: Rector
D1: Dean of Sciences
D2: Dean of IT
CM: Chairman
RA: Research Associate
PhD: PhD student
Lec: Lecturer

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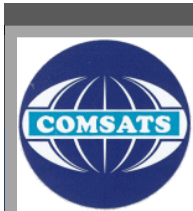
We divided Progress into seven phases:

- Phase I (Desktop VOBOX)
- Phase II (Server VOBOX)
- Phase III (Cluster building)
- Phase IV (Memory up-gradation)

Completed

- Phase V (Storage Element)

In progress

- Phase VI (Network up-gradation)

Immediate Next target

- Phase VII (Hardware up-gradation)

Next target

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One VOBOX Desktop PC, (March 2009)

➲ OS: Scientific Linux for CERN (SLC-4) version 4

➲ Bandwidth: 2 Mbps

➲ Recognition (green status) in the ALICE world.

Server VOBOX (September 2010)

➲ Replaced desktop system with Dell Power Edge T710 server, 4GB RAM

➲ Updated OS: SLC 5.

➲ Production started

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Cluster Building (September 2011)

➲ Three server nodes *(VOBOX, SITE BDII, CREAMCE)* and five worker nodes *(WNs)*.

  ➲ 8 cores system, 16 Threads

  ➲ 16 GB memory per WN

➲ OS: SLC5

➲ Bandwidth: 24 Mbps bandwidth

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(January 2012)

➲Glite 3.2

➲Cluster capable of processing up to 80 (ALICE, OPS and DTEAM) jobs.

➲Production started formally

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December 2012,

➲ Glite 3.2 expired.

➲ EMI(European Middleware Integration)

➲ new architecture.

March 2013,

➲ Successfully installed and configured the EMI-2 on (CREAMCE, SBDII, WNs).

➲ *Back in the production*

GOCDB

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GOCDB 4

Browse
- My Sites
- NGIs
- Sites
- Service Groups
- Service Endpoints

Add
- Add Site
- Add Service Group
- Add Service Endpoint
- Add Downtime

Downtimes
- Recent & Planned

About GOCDB4
- Doc, Help & Support

Search

[ ] Submit

User Status

Registered as:
Ali Zahir

View Details
Manage Roles

Site: PK-CIIT
PK-CIIT

Delete   Edit

Contact

E-Mail	alizahir@comsats.edu.pk
Telephone	+923125351713
Emergency Telephone	+923455231466
CSIRT Telephone	+923125351713
CSIRT E-Mail	azam_khan@comsats.edu.pk
Emergency E-Mail	
Helpdesk E-Mail	

Project Data

NGI/ROC	AsiaPacific
Infrastructure	Production
Certification Status	Certified Change
Visible to EGI	✔ ?

Networking

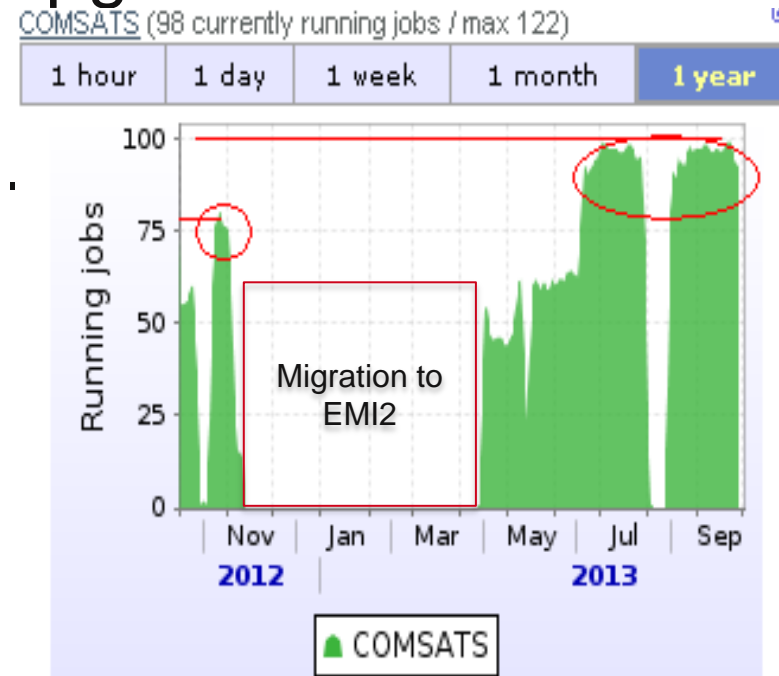| Home URL	http://ciit-grid.comsats.edu.pk
GIIS URL (case sensitive)	ldap://cern-56-24-243.comsats.edu.pk:2170/mds-vo-name=PK-CIIT,o=grid
IP Range	210.56.24.242/255.255.255.240
Domain	comsats.edu.pk

Location

Country	PK
Latitude	33.650403
Longitude	73.155899
Time Zone	Asia/Karachi
Location	Islamabad, Pakistan

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ALICE

Memory up gradation / WNs addition (May 2013)

➪ RAM's of WNs had been upgraded from **16 GB to 48 GB.**

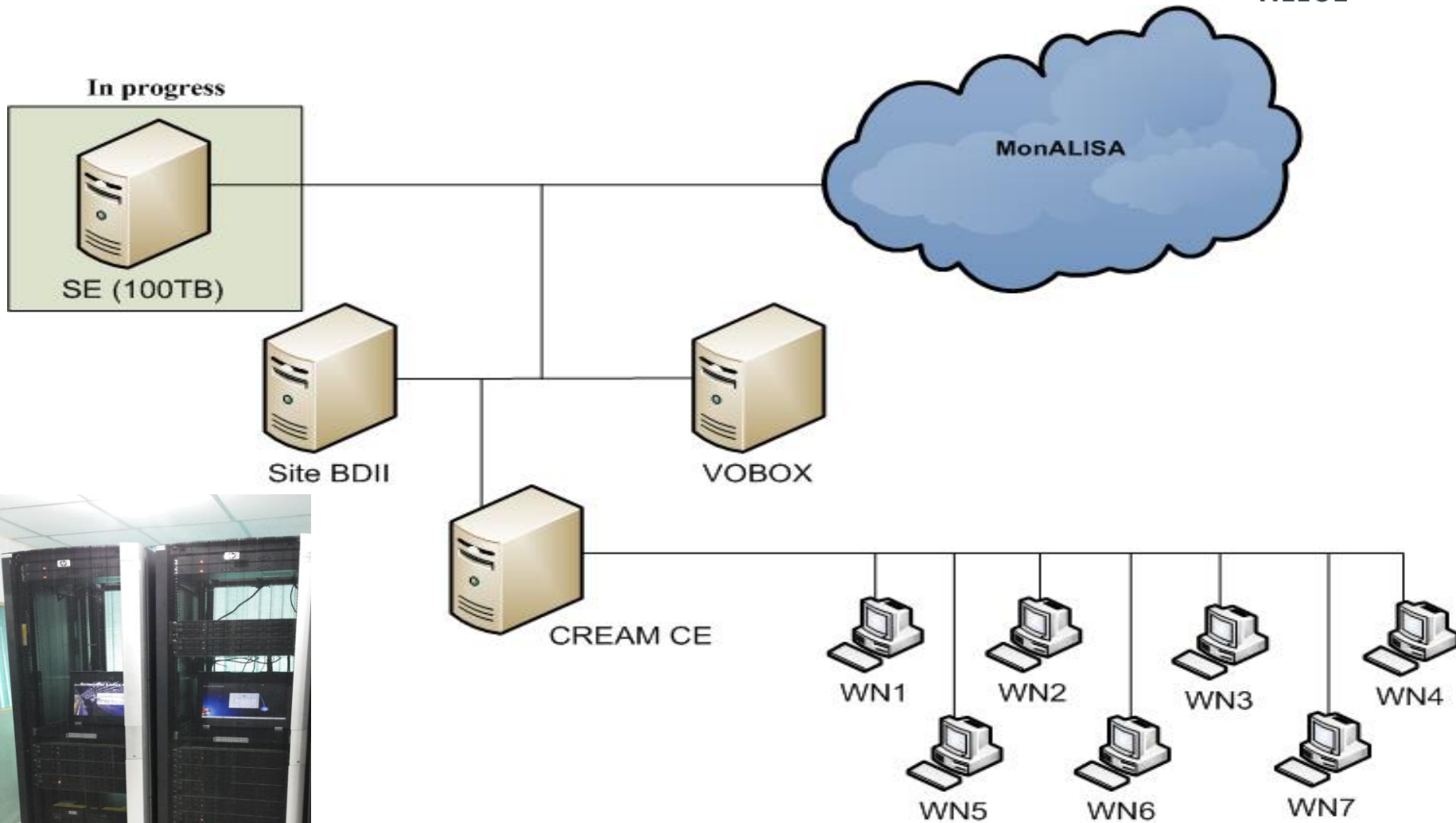➪ Two worker nodes added.

➪ Jobs increases from **80 to 112.**

COMSATS (98 currently running jobs / max 122)

| 1 hour | 1 day | 1 week | 1 month | 1 year |

Running jobs

100

75

50

25

0

Migration to EMI2

Nov   Jan   Mar   May   Jul   Sep

2012   2013

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- EMI-2 up and running.
- CVMFS configured successfully.
- EMI VOBOX soon ~1 month.
- Move to EMI-3 soon ~1 month.

Performance of PK-CIIT

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Done Jobs

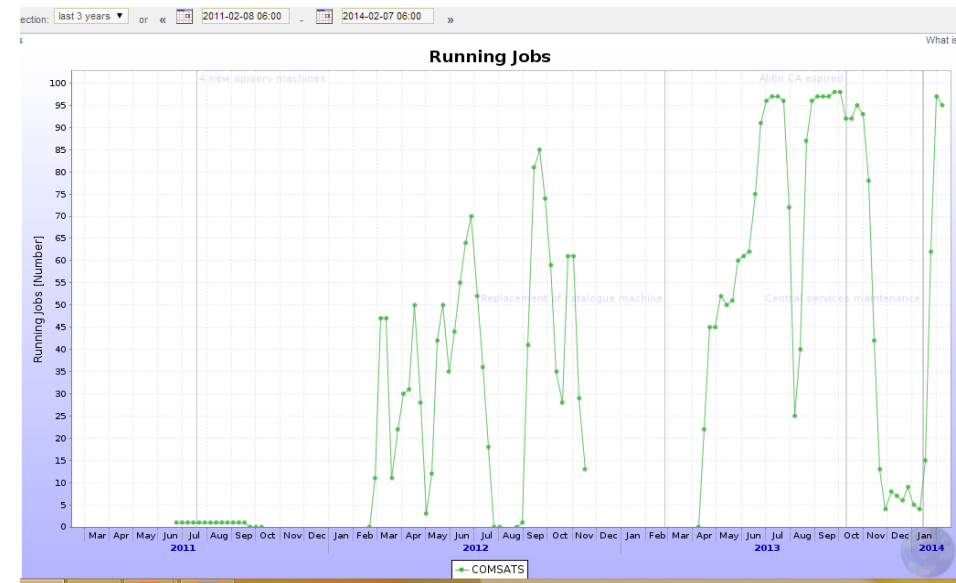

Running Jobs

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Induction of Storage Element: shortly ~1 month

➲100 TB

➲ Physical storage and retrieval.

➲Support of EOS.

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⮱Current bandwidth: ~ 24mbps

⮱100mbps: ~ 5-6 months

   (is being negotiating with **Pakistan Education & Research Network (PERN)**)

⮱Day and night packages:

   (by utilizing University Bandwidth ~150mbps)

   ⮱ 100mbps in day time
   ⮱ 100+150= 250mbps in night time

   PERN: a project of Higher education commission of Pakistan

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➲Site is ready for IPv6. (hardware supports)

➲OS supported

➲IPv6 not supported by current ISP

➲Possible by shifting to PERN network

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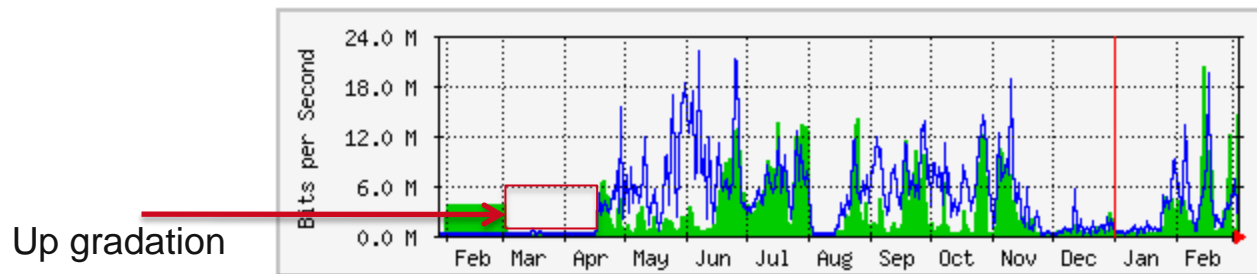➲Currently

  ➲Bandwidth 24Mbps

  ➲Not connected to PERN

  ➲Connection to LHCONE not supported presently

➲Future Target

  ➲Connection to LHCONE Via PERN network

`Yearly' Graph (1 Day Average)

Up gradation

		Max	Average	Current
In		20.2 Mb/s (20.2%)	2598.6 kb/s (2.6%)	14.6 Mb/s (14.6%)
Out		22.0 Mb/s (22.0%)	3993.3 kb/s (4.0%)	4270.8 kb/s (4.3%)

GREEN ### Incoming Traffic in Bits per Second

BLUE ### Outgoing Traffic in Bits per Second

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➲40 million rupees budget approved: $400k not $40K ☺

➲$100k - $150k: Infrastructure development

➲$250k – $300k: Hardware up gradation

➲Improve the status among ALICE community

SAM/SUM testing

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dashboard

SUM VISUALIZATION | ALICE

VO view

Latest Results   Historical View   Feedback   Help

Site-Groups	Profiles	Metric Exit Status
all sites ▼	ALICE_CRITICAL ▼	All Exit Status

Sites	Service Flavours	Metrics ❓	
Cagliari	All Service Flavours	All Metrics	OK
Catania	All CE flavours	emi.cream.CREAMCE-DirectJobSubmit	WARNING
CCIN2P3	CREAM-CE		CRITICAL
CERN			UNKNOWN
Clermont			MISSING
CNAF			REMOVED
COMSATS			NA

☑ Show Disabled Flavours ❓   ☑ Show Disabled Metrics ❓

Algorithm for calculating the Site and Service Availability

Legends for Metric Result Status

Status:	NA	OK	WARNING	CRITICAL	UNKNOWN	MISSING	MAINTENANCE	REMO
Legend:	NA	OK	W	C	U	M	MT	R

Note: brightest colors: test is 0 - 12 hours old, ... lightest colors: test is more that 12 hours old

Legends for Metric Names

Legend	Metric Name	Legend	Metric Name	Legend	Metric Name	Legend	Metric Name	Legend	Metric Name
1	emi.cream.CREAMCE-DirectJobSubmit								

Link to data

Sitename	Flavour	Host status in profile ALICE_CRITICAL	Hosts	1
COMSATS	CREAM-CE	OK	cern-56-24-244.comsats.edu.pk	OK

Nagios Performance

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EGI Availability / Reliability

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Availability & Reliability

TOP-BDII AVAILABILITIES | SITE AVAILABILITY AND RELIABILITY | OPERATIONS PORTAL TOOLS

Availabilities & Reliabilities > Last 30 days

NGI > AsiaPacific

SITE	NGI	LINE CHART	GANTT CHART	AVAILABILITY	RELIABILITY	UPDATED AT
MY-UUM-SINTOK	AsiaPacific			100.00	100.00	2012-07-16 04:53:23
NCP-LCG2	AsiaPacific			100.00	100.00	2014-03-04 07:38:38
NZ-UOA	AsiaPacific			0.00	0.00	2013-04-30 10:47:56
PH-ASTI-LIKNAYAN	AsiaPacific			0.00	0.00	2013-05-29 04:53:55
PK-CIIT	AsiaPacific			100.00	100.00	2014-03-04 07:38:38
T2-TH-CUNSTDA	AsiaPacific			77.36	77.36	2014-03-04 07:38:39
Taiwan-LCG2	AsiaPacific			99.19	100.00	2014-03-04 07:38:40
TH-HAII	AsiaPacific			60.75	60.75	2014-03-04 07:38:39

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- Trying hard to ensure Availability & Reliability.
- 2017-18 we want to be towards the top of tier-2 & than onwards towards tier-1 slowly & gradually.
- Up till now we are the service providers.
- Want to play our role in R&D. (grid operations, security, distributed computing, grid/cloud development, Data Management, Data and Process Preservation)
- **Most importantly:** COMSATS is open for further collaborations and cooperation with other site.

THANK YOU