

# The status of IHEP Beijing Site

WLCG Asia-Pacific Workshop

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IHEP, China

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Worldwide LHC Computing Grid  
Distributed Production Environment for Physics data Processing



## outline

- Experiments
- Grid services
- Hardware&Software
- Network
- Other activities
- Future plan



## Experiments

- Support CMS、 Atlas, about 80 physicists participating in the two experiments
  - CMS: Peking University(PKU), IHEP
  - Atlas: Shandong University(SDU), University of Science and Technology of China(USTC), Nanjing University(NJU), IHEP
- Local Experiment: BES
  - 29 institutes from China, Japan, Germany, etc
  - 5PB totally in next 5 years
  - 2000 kSpecInt2K



## Grid Services

- UI (User Interface): Glite-3.0.2
- RB (Resource Broker): Glite-3.0.2 (LCG RB)
- MyProxy: Glite-3.0.2
- SE (SRM/Dcache/DPM): Glite-3.0.2
- CE (Torque) : Glite-3.0.2 (LCG-CE)
- MON (R-GMA): Glite-3.0.2
- BDII: Glite3.0.2
- WNs: Glite-3.0.2
- FTS: Glite-3.0.2
- LFC: LHC File Catalogue
- CA: IHEP CA
- VOMS: for BES VO



## Hardware Resources

- Computing Resources
  - 28 CPUs (Xeon 3.2GHz/2GB/73SCSI, IBM Blade Server)
  - 10 CPUs (Xeon 3.0GHz/2GB/80GB Sata, 1U Rackmount).
- Storage resources
  - CMS SE (Dcache/srm): 1.2TB(SCSI Raid5)
  - Atlas SE (Dcache/srm): 1.2TB(SCSI Raid5)





## Infrastructure

- 500 m<sup>2</sup> floor space refurbished by spring 2006
  - Power
  - UPS
  - Cooling



## Software

- All machines running Scientific Linux CERN 3.0.5
- Quattor based OS installation
- Network File System: NFS/Lustre(testing)
- Grid Middleware: gLite 3.0 based
- Local Resource Manager: Torque
- Monitoring: ganglia
- Currently supported VOs: ATLAS, CMS, BES, GILDA, EUCHINA





## Manpower

- About 100 staff from IHEP
- 6 staff from other institutes



CC-



## CA and BES VOMS Operation

- IHEPCA is a unique CA recognized by EUGridPMA and APGridPMA, covering HEP and Biomedical.
- Statistics:

Number of issued certificates:

Types	User	Host	Server	Total
Valid	59	82	2	143
Revoked	33	9	1	43



## Subscribers:

Org.	Number
IHEP	35
SDU	6
PKU	5
BUAA	2
CNIC	2
NNU	1
USTC	1
NJU	1
CCNU	1

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# Web-based CA User Interface

The screenshot shows a Mozilla browser window with the address bar set to `https://gridca.ihep.ac.cn/`. The page title is "IHEP Grid Computing Certification Authority" and the main heading is "Certificate Management".

**GRID CA**

- Home
- Last News

**Downloads**

- CP/CPS
- Get CA certificate
- Certificate Revocation Lists
- Globus Bundle

**Getting a Certificate**

- Request a Certificate
- Get Requested Certificate
- Export Certificate
- Renew Certificate
- Revoke Certificate

**Certificates List**

- Valid
- Revoked
- Search

**Links**

**Certificate Management**

Here is a tutorial of certificate management. We'll teach you how to export your certificate and private key from your browser and how to transform certificate format for more usage.

When you apply for your certificate by online generating Certificate Sign Request, the private key is stored in encrypted form on your browser. After downloading the certificate, the private key is added with the certificate. We recommend that you copy your certificate and private key to removable media which should be kept in safe.

**Exporting the digital certificate with the private key from IE**

- Open the IE browser, choice the "Tools" menu, click "Internet Options".
- Click the "Content" tab, then choose "Certificates".
- Click your certificate that you want to export.
- Click the "Export" button
- Click "Next" in the "Export Wizard" window
- Select "Export private key". Click "Next"
- Make sure "Personal Information Exchange -PKCS#12" is checked, and also the "Enable strong protection".
- The "Delete private key if successful" must be unchecked. The "Include all certificate in path" button should be unchecked, too. Click "Next".
- Type the passphrase (twice) that you use to protect your private key. We recommend you choice 8 characters pass phrase. Click "Next".



# VOMS for BES experiment

The screenshot shows a Microsoft Internet Explorer browser window displaying the VOMS Virtual Organization User Registration Request page. The browser's address bar shows the URL: `https://voms.ihep.ac.cn:8443/voms/bes/webui/request/user/create`. The page title is "The bes VO". The main content area is titled "VO User Registration Request" and contains the following text:

Request to Administrators » requesting VO membership

## VO User Registration Request

To access the VO resources, you must agree to the VO's Usage Rules. Please fill out all fields in the form below and click on the appropriate button at the bottom.

After you submit this request, you will receive an email with instructions on how to proceed. Your request will not be forwarded to the VO managers until you confirm that you have a valid email address by following those instructions.

**IMPORTANT:** By submitting this information you agree that it may be distributed to and stored by VO and site administrators. You also agree that action may be taken to confirm the information you provide is correct, that it may be used for the purpose of controlling access to VO resources and that it may be used to contact you in relation to this activity.

DN: /C=CN/O=HEP/O=IHEP/OU=CC/CN=yaodong cheng  
CA: /C=CN/O=HEP/CN=gridca-cn/Email=gridca@ihep.ac.cn  
CA URI:

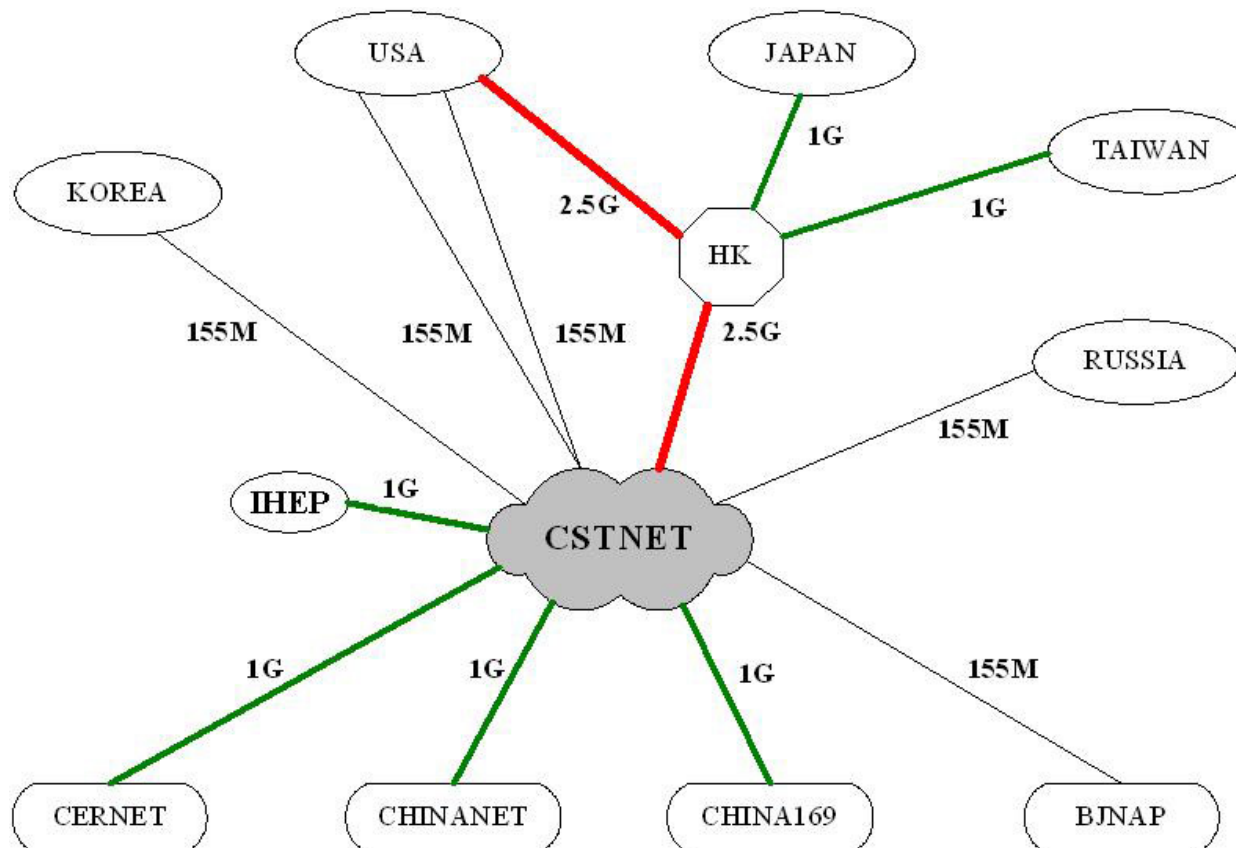
Family Name:   
Given Name:   
Institute:   
Phone Number:   
Email:   
comment:

The browser's taskbar at the bottom shows the system tray with the date and time, and the Internet Explorer icon.



# Connectivity

- IHEP has a 1 Gbps connection to CNIC



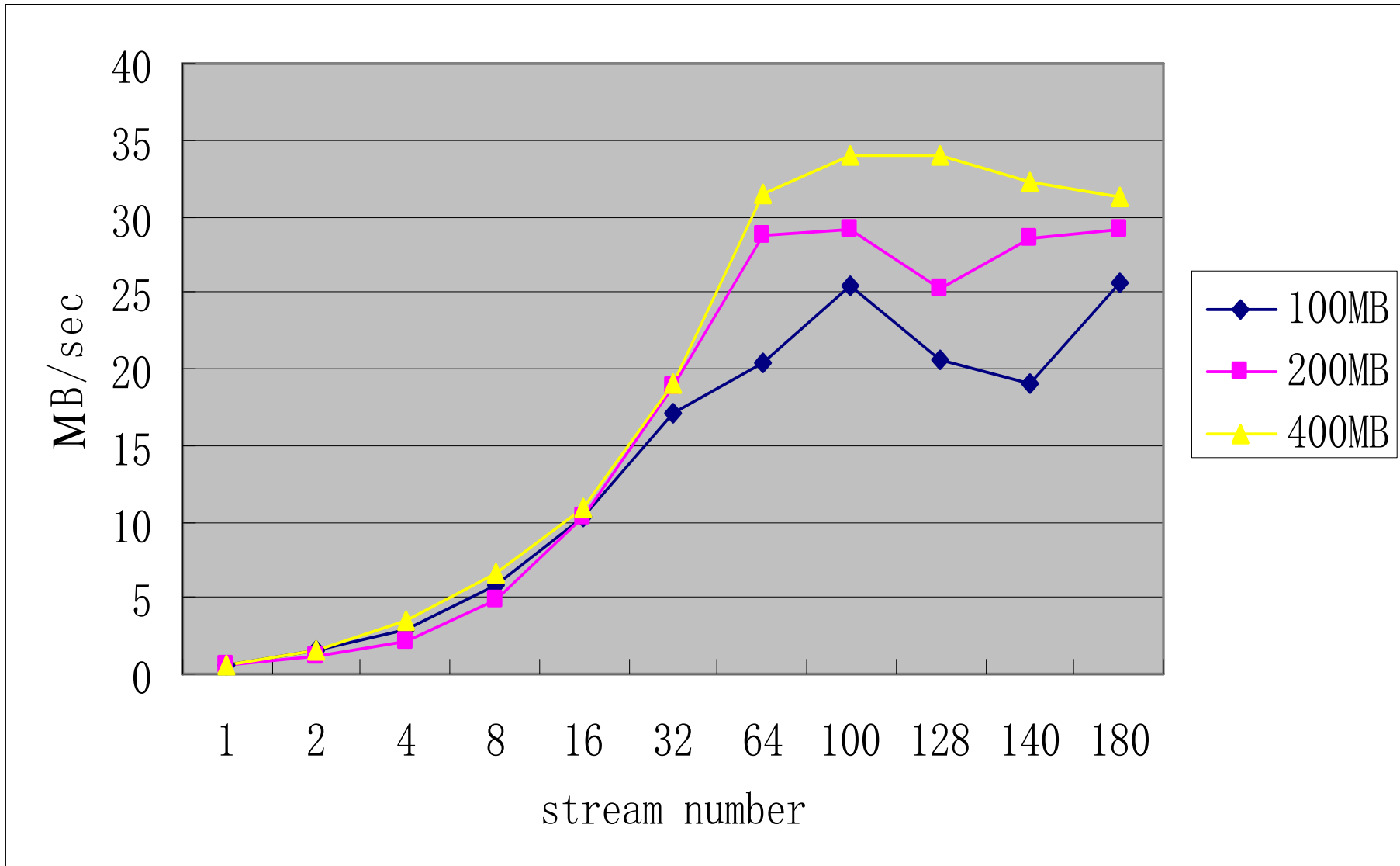


## Quick Tests

- Using lcg-cp
- Data transfer from IHEP to Taipei, IN2P3,
- File size: 100, 200, 400MB
- Stream number: from 1 to 180
- Local 1GB link + IDE disk server



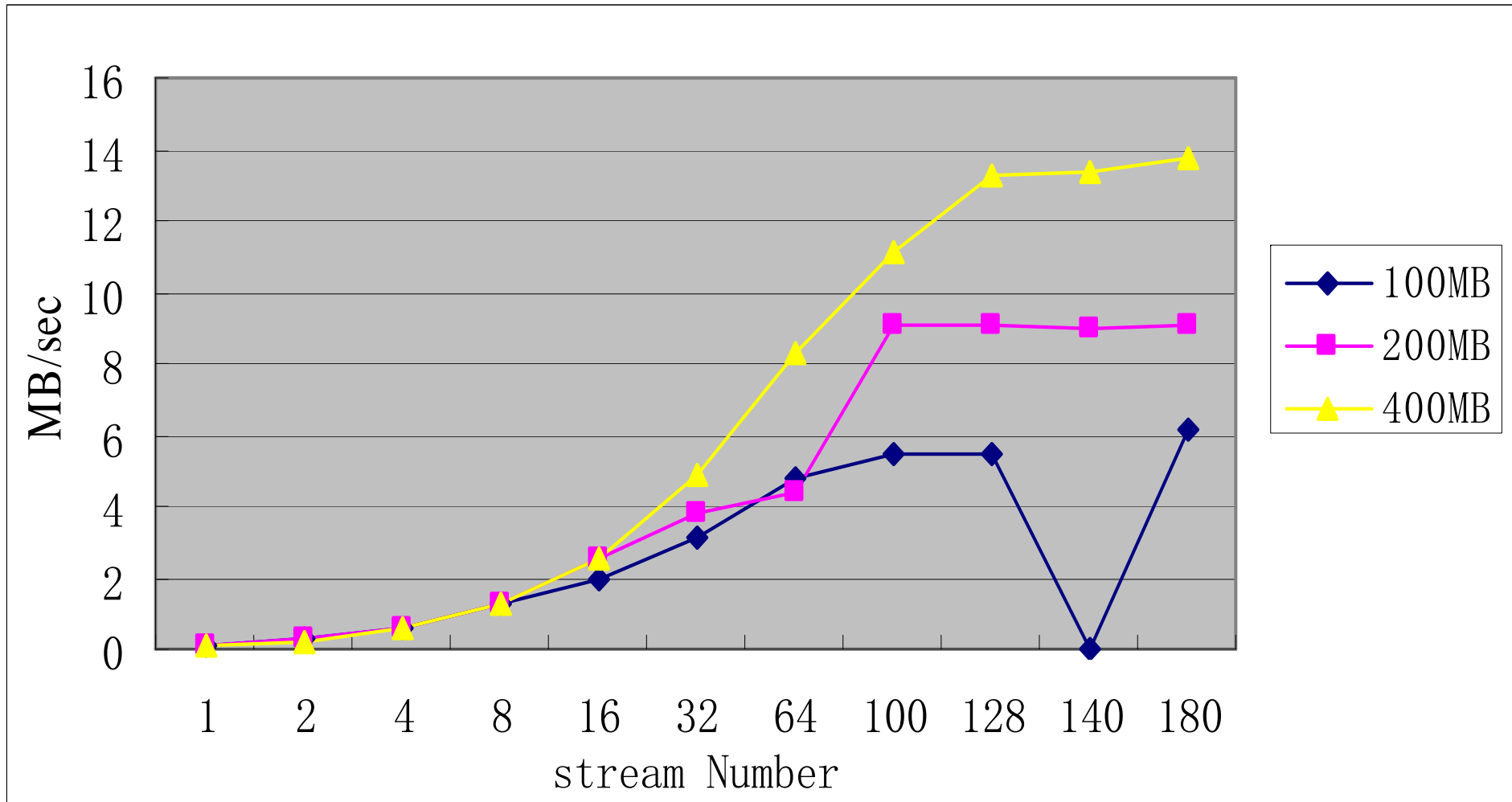
To [lcg00123.grid.sinica.edu.tw](mailto:lcg00123.grid.sinica.edu.tw)







grid05.lal.in2p3.fr



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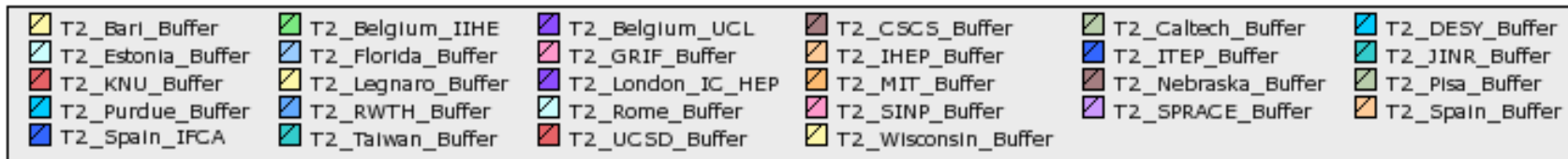
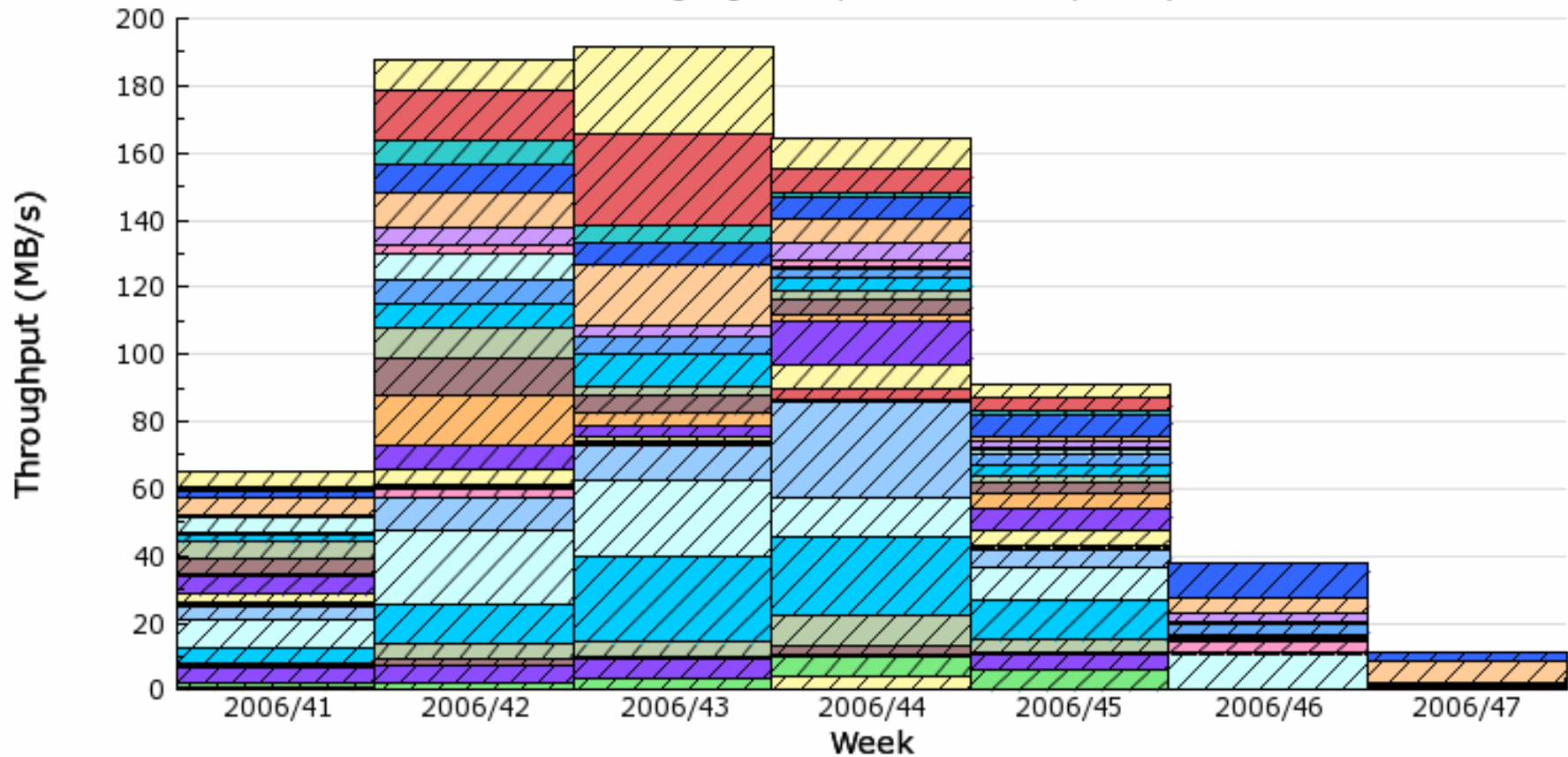
## Comments

- Performance largely affected by network
- Multi-stream can achieve good performance
  - About 20MB/s to Taipei with 30 streams
- Network to Europe is far from satisfactory
- CNIC is helping us to improve it



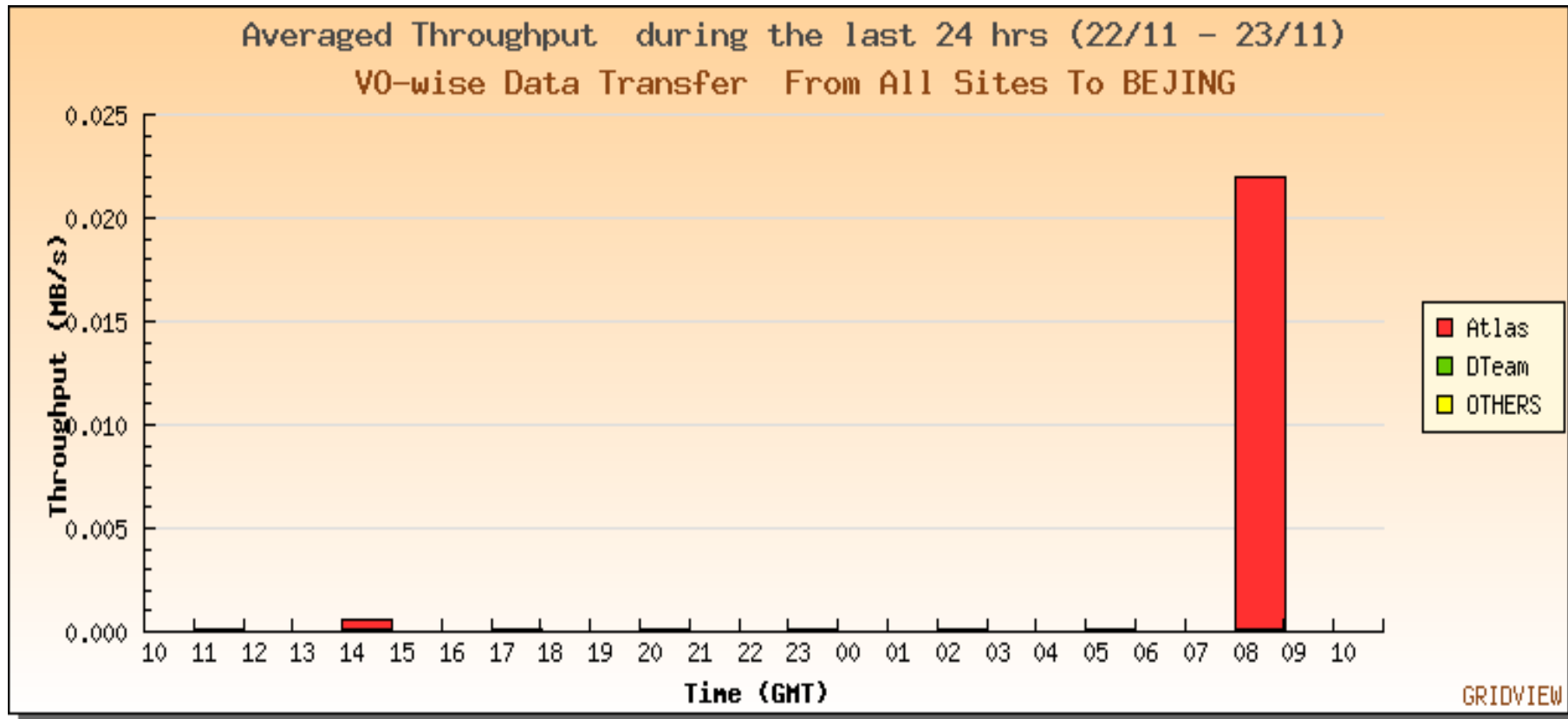
## PhEDEx Prod Data Transfers By Destination

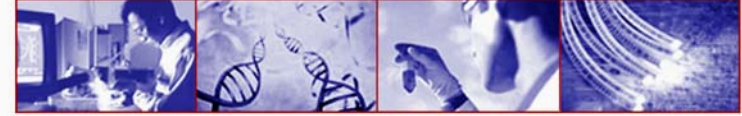
6 Weeks from 2006/41 to 2006/47 GMT  
 Nodes matching regular expression 'T2.\*\_(?!MSS)'





# Atlas SC4 Result





## Other Activities

- We take part in **EUChinaGRID** project
  - Aims to support the interoperability of the Grid infrastructures in Europe (**EGEE**) and China (**CNGRID**) for the benefit of eScience applications
  - To foster the creation of a intercontinental eScience community
    - Training people
    - Supporting existing and new applications
  - The official start is 1st January 2006, 24 Months duration
  - Support ATLAS and CMS@LHC and the Cosmic Ray Experiment ARGO in Yangbajing
- Attend **WISDOM** data challenge
  - scheduled from 01/10/2006 to 15/12/2006



## Current Problems

- Network is limited
- Middleware needs more robustness, usability and functionality
- More user tutorial is needed
- Manpower is not sufficient



## Beijing Site in the Future

- Beijing site have been extended up to more computing power and storage capacity, will provide more powerful resource support.
- Signed MOU for building two T2 for CMS and Atlas respectively:

Sum of Atlas and CMS resources

2 X Tier2	2006	2007	2008	2009	2010
CPU (kSI2K)	100	500	1000	1400	2000
Disk (TB)	20	50	400	400	600

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# Thank you!

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