ILDG/JLDGの進捗

HPCI戦略プログラム分野5
『物質と宇宙の起源と構造』全体シンポジウム
2014年3月3,4日
於：富士ソフトアキバプラザ

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ILDG/JLDG Overview

- JLDG: Japan Lattice Data Grid
  - for Lattice QCD collaborations (in Japan) using supercomputers installed at distant sites
  - to manage and share daily research data
- ILDG: International Lattice Data Grid
  - for Lattice QCD community
  - to share and archive QCD configurations (fundamental data of QCD simulation) worldwide
  - nothing to be reported here, noting new movement
- Supported by HPCI Strategic Program Field 5

DiGS

DiGS: distributed grid storage developed at EPCC, Edinburgh

UKQCD (QCDgrid/DiGS), UK, Edinburgh

LDG [lattice forum data grid], **Germany/France/Italy/… DESY**

dCache

JLDG, Japan Tsukuba CCS

USQCD, USA Fermilab/JLab

dCache

Gfarm

gfarm: grid data farm developed at AIST and Tsukuba

http://www.lqcd.org/ildg

ILDG

CSSM, Australia Adelaide

dCache

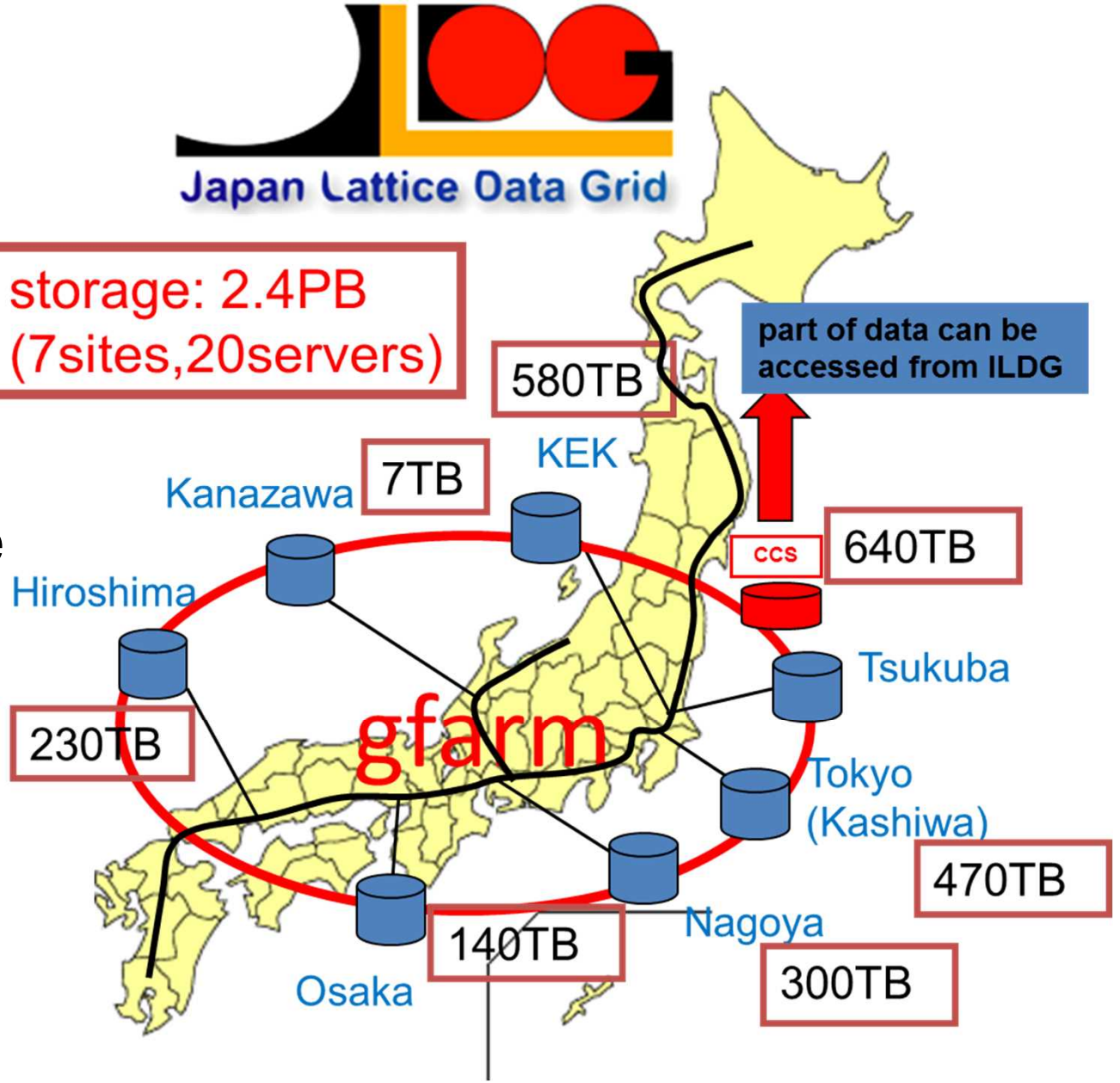
dCache: distributed data storage caching system developed by a joint collab. of DESY and FNAL

7 sites

1Gbps VPN
(HEPnet-J/sc)

File systems are
bounded into
a single FS

The FS looks
the same from
all sites



Gfarm: a grid-based file system software (O. Tatebe)

JLDG team と budget

- **JLDG team:　22名（11機関＋企業）**
  - 建部,天笠,吉江(筑波),松古(KEK),外川,鎌野(大阪),石川 (広島),武田(金沢),
    實本(東京),青木,青山,山崎,三浦(名古屋),青木,福村(京都),渡邊,土井(理研),
    駒,住吉(沼津高専),滝脇(国立天文台),三上,金野(日立ソリューションズ東日本)

- former collaborator
  - 宇川,佐藤,石井,浮田(筑波)

- budget
  - 日本学術振興会先端研究拠点事業「計算素粒子物理学の国際研究ネットワークの形成」
  - 国立情報学研究所CSI 委託事業「グリッド・認証技術による大規模データ計算資源の連携基盤の構築」
  - 国立情報学研究所「e-science 研究分野の振興を支援するCSI 委託事業」の研究課題「計算素粒子物理学の高度データ共有基盤JLDG の構築」及び「計算素粒子物理学のデータ共有基盤JLDGの高度化」
  - 新学術領域・素核宇宙融合「分野横断アルゴリズムと計算機シミュレーション」
  - 最先端研究基盤整備事業業「eーサイエンス実現のためのシステム統合・連携ソフトウェアの高度利用促進」
  - **HPCI戦略プログラム分野5「物質と宇宙の起源と構造」**

Progress this year: Summary

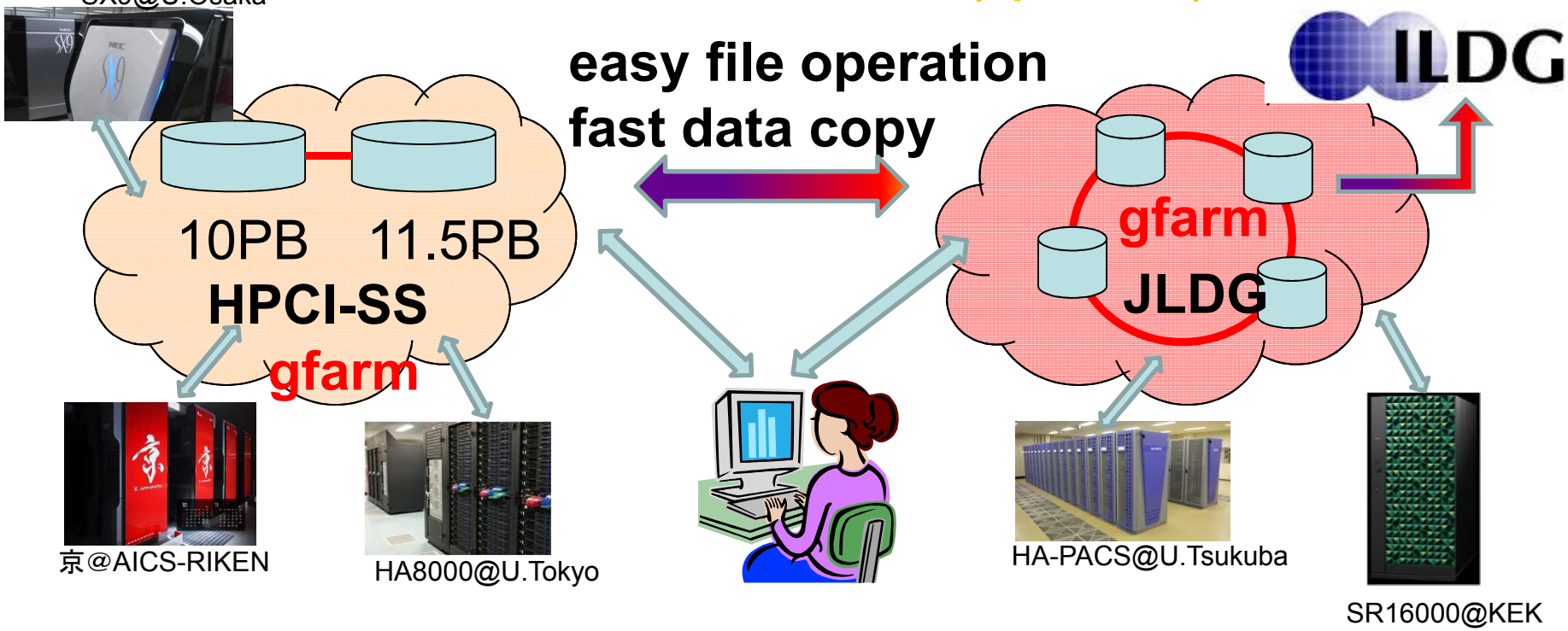
- **New JLDG sites:** Kyoto YITP, Riken (Wako)

9 sites 5PB

- **New servers at existing JLDG sites**
  - HPCI Strategic File System : 2.1PB @ Tsukuba
  - Others: 0.3PB @ Tsukuba, 0.55PB @ KEK
- **Cooperation with HPCI Shared Storage**
  - system construction completed
  - start operation soon (after user/admin manual ready)
- **JLDG System upgrade**
  - Zabbix (monitoring system) : completed
  - VOMS upgrade : completed
  - Multiplexing of admin servers: on-going

Cooperation of JLDG and HPCI-SS

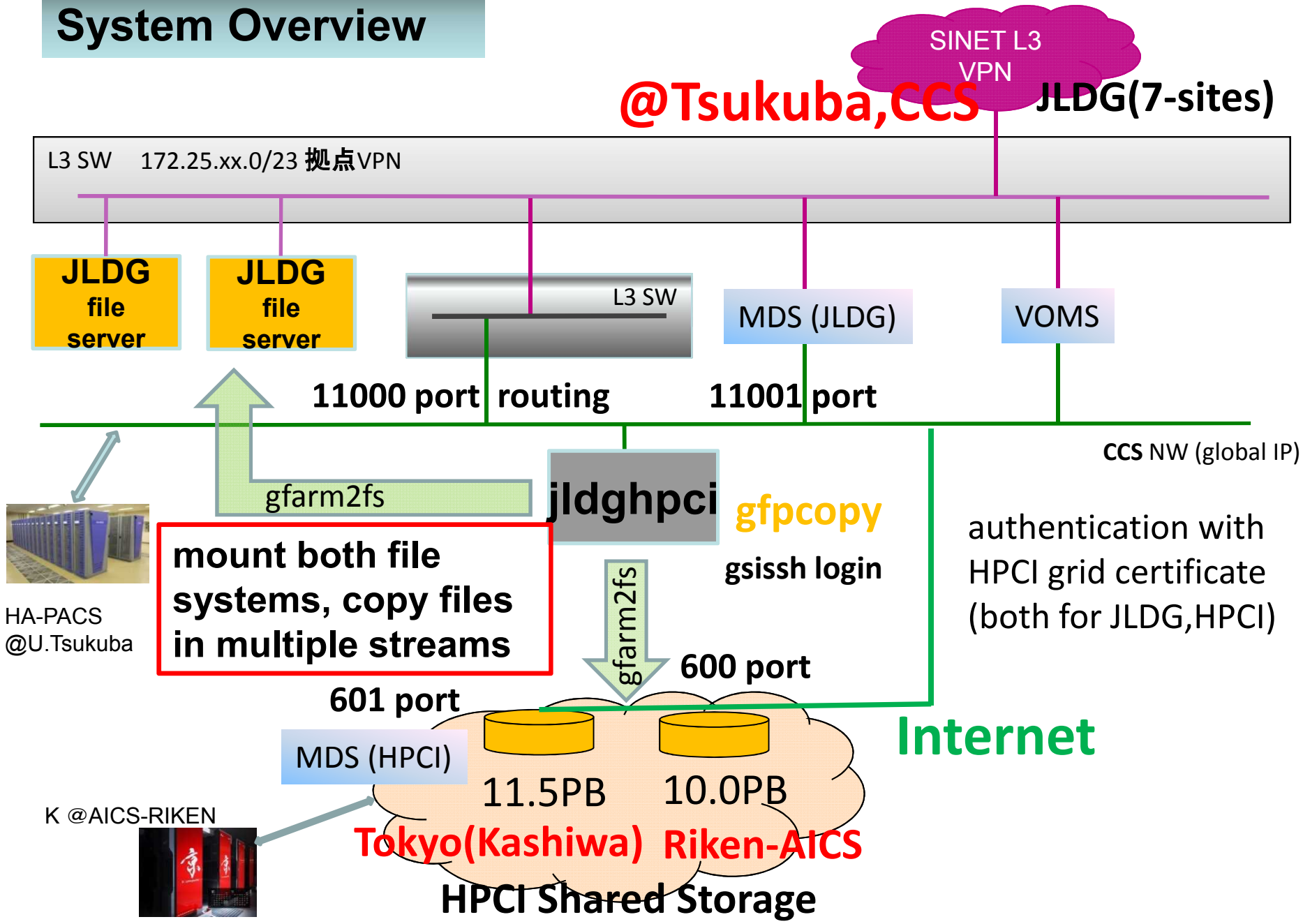
HPCIシステム利用研究課題 (hp120108) として推進



Needs:
Fundamental data generated on a supercomputer connected to HPCI-SS (e.g. K). Do calculations of physical quantities on other supercomputers connected to JLDG (e.g. HA-PACS@Tsukuba).

Solution:
Fast data copy between JLDG and HPCI-SS

System Overview



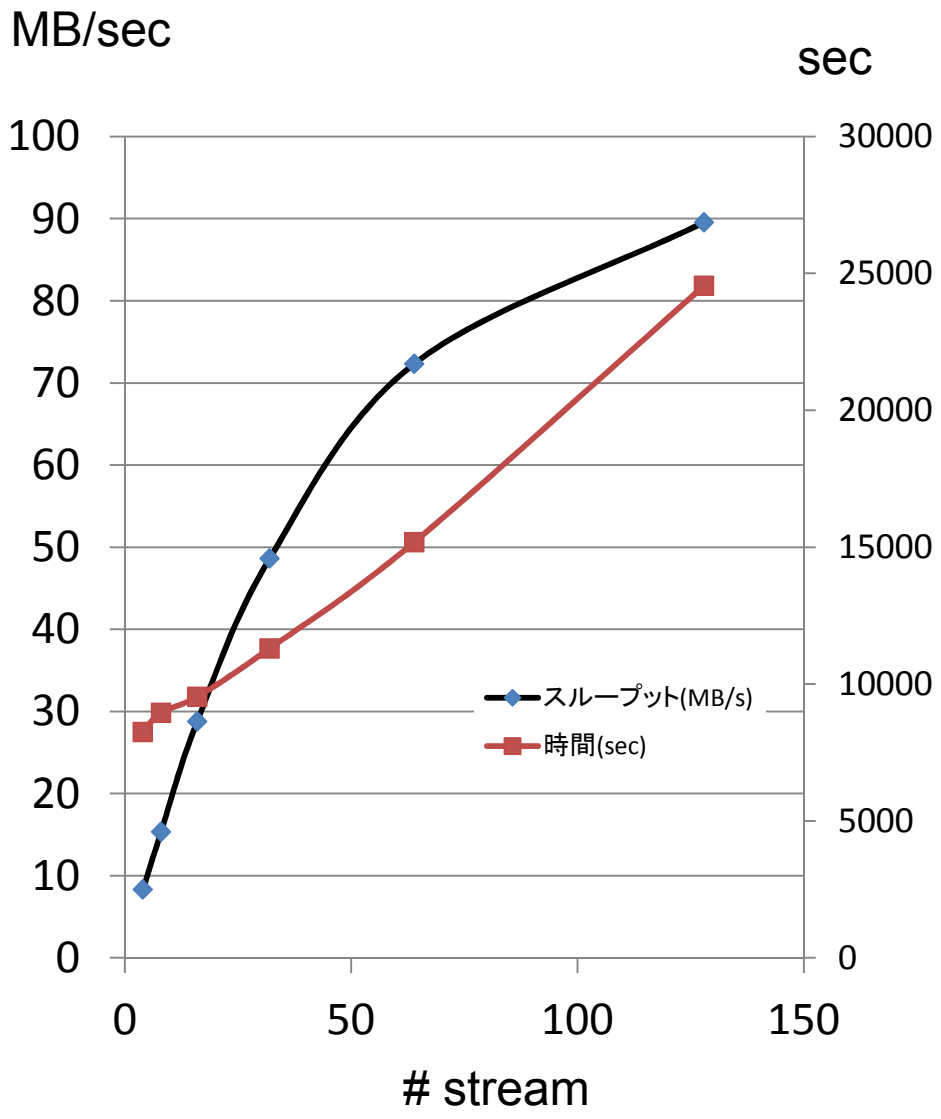
Performance

gfpcopy from HPCI-SS to JLDG

file size : 1GB
#file per stream : 16

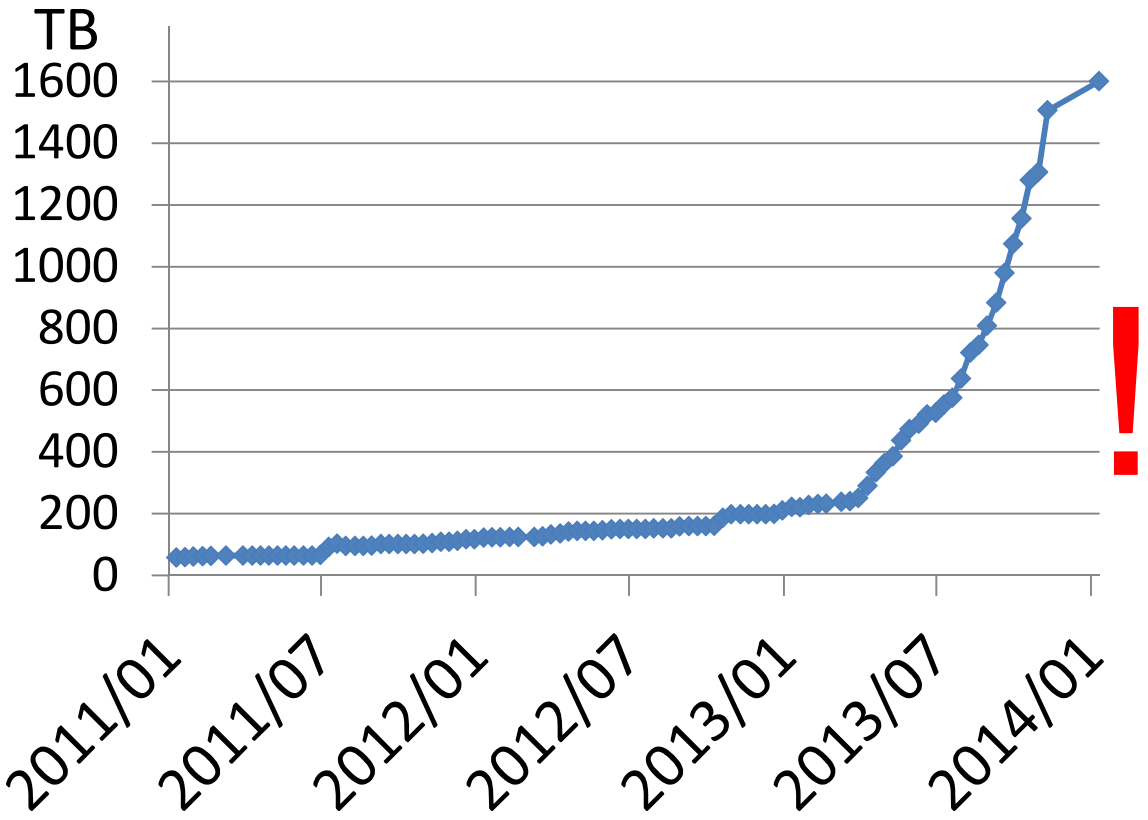
#stream 4, 8, 16, 32, 64, 128

Performance reaches 90MB/sec (over 1Gbps network)



JLDG Statistics

- **11 research groups, 67 users**
- **1.6PB data, 57M files**



JLDG Disk Usage

new items in ToDo list

- Security
  - security guideline
  - organization of Univ./Institute

- Data integrity
  - silent data corruption
  - learn from predecessors (CERN, LANL,….)
  - weak/strong point of JLDG
  - md5sum at every action