

Computing at MPP

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**MPP Computing Commission
+ Fachabteilung IT**

MPP Project Review, 15.12.2015

Personnel Fachabteilung IT

	Linux	MS	Mac	SW	LAN	HW	Print	Phone
Erhardt, A.	X	X	X	X	X	X	X	X
Leupold, U.	X	X	X	X	X	X		X
Krämer, M.					X			X
Pan, Y.	(X)	X						
Salihagic, D.	X			X		X		
Krebs, K.					X			X
Kriesel, A.	X		X			X	X	X
Haunolder, T.	X	X	X			X		
Zoupanos, S. (temp.): Implementation of SSO @ MPP								

Hardware Overview

- Central Servers
 - 35 file servers with ~ 100 TB
 - CEPH storage cluster, currently 280 460 TB
 - mail, web, DNS, accounts, backup, printer, ...
 - SSO: Kerberos+LDAP on 3 virtual machines
- Experimental and engineering groups
 - ~400 PCs, 2/3 Linux, 1/3 Windows
- Theory group
 - ~ 100 PCs, mostly openSUSE

Mail service

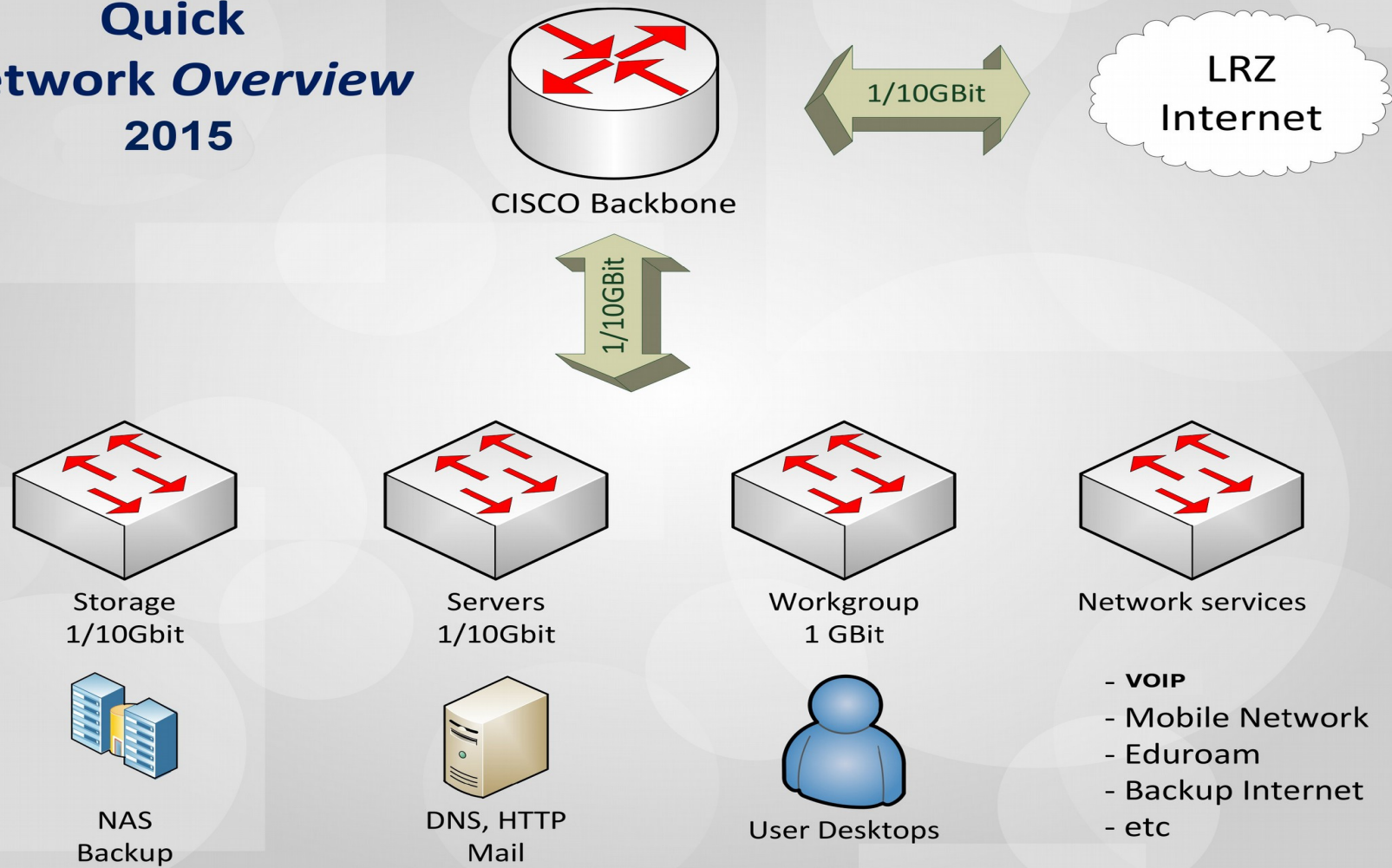
- 12+12 CPU cores, 64GB RAM, 8TB disk, currently 90% free
 - SSD-cached mail storage (bcache)
 - Dovecot IMAP Server
 - Postfix MTA
 - Squirrelmail Webmail:
 - <https://mail.mpp.mpg.de/webmail/>

Container Village

- Infrastructure of meeting rooms improved
 - 1 SMART Board (70")
 - 1 Zotac Zbox w/ MS Windows connected to it
 - In C031: additional Dell touchscreen (user req.)

LAN

Quick Network Overview 2015



LAN (2)

- New Cisco central router
 - New Hardware for reliability reasons
 - More performance and flexibility
 - Possible emergency fallback to old router
 - Configuration and commissioning moved to Q1/2016 due to more urgent need for new switches*

LAN (3)

- EduRoam @ MPP
 - Eduroam WiFi access enabled
 - Works stable after some fine-tuning
 - Minor trouble due to misconfigured clients and buggy software (some MacOS X 10.x releases)
 - Access: connect to ESSID eduroam use *yourusername@mpp.mpg.de* with your MPP SSO password

CEPH Storage Cluster

- CEPH storage cluster @ MPP:
 - 9 storage nodes, 108 disks, currently 460 TB* raw
 - PCIe SSDs for fast metadata access
 - 3 management nodes
 - 2x 10 GbE network interfaces per node
 - Interconnected by one 32-port 10GbE switch

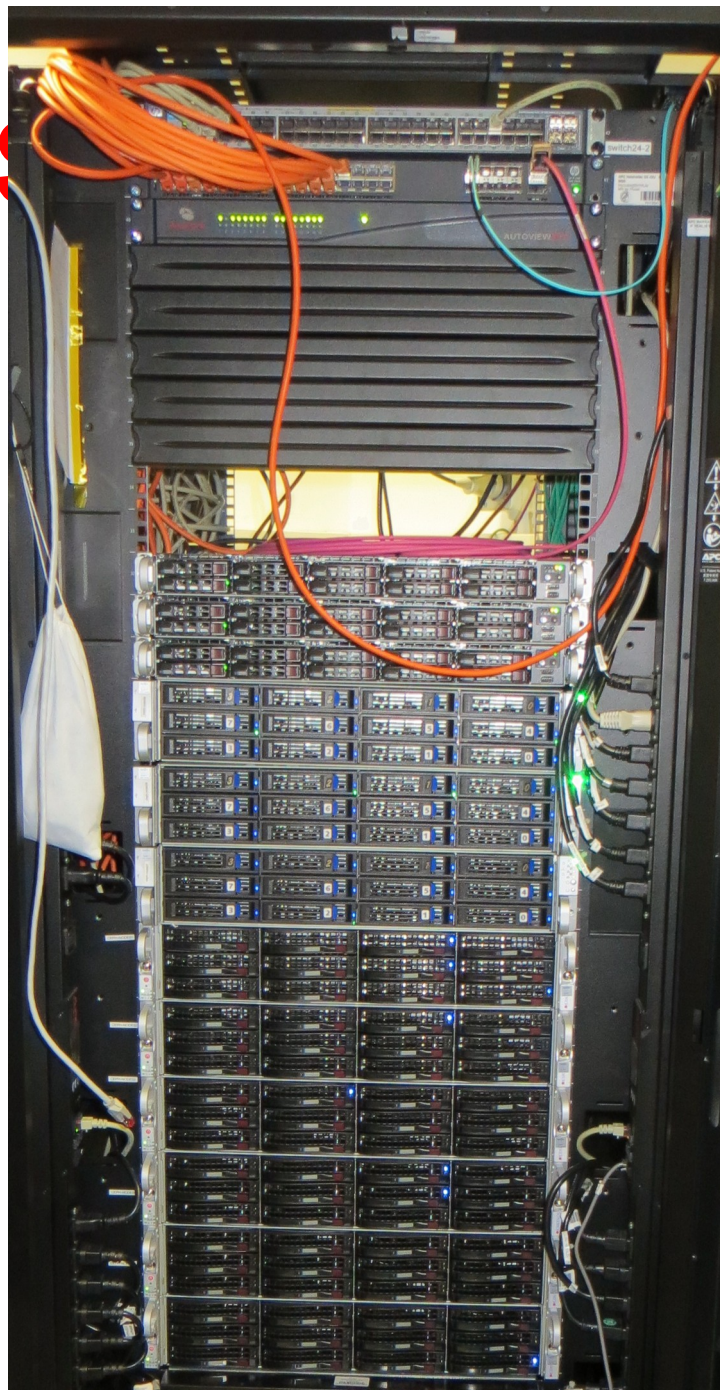
CEPH Storage Cluster (2)

- accessible via autofs from any Linux PC
(/remote/ceph/{u/user}|{g/group}/)
- cheap, redundant storage: failure of any one or selected two nodes is covered, but **no backup**
- after 2+ years of testing: mostly stable operation, but occasionally needs manual intervention, i.e. not yet a replacement for NFS
- much of the work courtesy O. Schulz (GERDA)

CEPH Storage Cluster (3)

- Future plans:
 - split server locations
 - 40 GbE interconnects between racks
 - more switches, racks and cablework needed

CEPH Server (4)



Software overview

- Operating Systems
 - Linux (Ubuntu 12.04/14.04),
OpenSUSE 13.2 (Theory), RHEL & clones
 - AIX, Solaris (Electronics workshop)
 - MacOSX (without IT infrastructure)
 - MS Windows (Admin., Labs, h1win, thwin)
 - Kerberos+LDAP single sign on (SSO)
infrastructure

Software overview (2)

- Applications / libraries
 - Mathematica, Maple, Portland & intel compilers, IDL, NAG, Matlab, ...
 - OSS with IT group & mppcc

Software Applications

- Commercial
 - Oracle 10, ~~Infopark Fiona cms~~, Typo3 CMS*, Tivoli backup, Gleitzeitserver, LogInventory, HP ProCurve Manager, ...
 - Cisco Prime Infrastructure (WLAN mgr.)
- Open Source
 - Indico, mysql, root, CERNLIB, phpBB, twiki, Asterisk, eGroupware, kvm, ...

Single Sign On (SSO) @ MPP

- Reduce number of different, non-synchronized authentication systems for different services
 - Analysis and implementation based on Kerberos and LDAP done by S. Zoupanos (now @ epfl.ch)
 - Setup based on Samba4 Active Directory replacement (running on Ubuntu LTS)
 - 3 independent virtual machines for redundancy
 - Windows, Linux, Eduroam use same password
 - Including the VOIP system is not trivial

Phonesystem Status

- Phone system works stable
- New computers installed last year
- OS and asterisk upgrades done in Q1/2015
- Primary UPS replaced in 2015,
secondary will follow in 2016
- Implemented “clip no screening”, i.e. forwarding of caller-number
- Feature requests welcome

MPP computing commission

- Subcommittee of IA
 - members: Abt, Bethke, Erhardt, Hahn, Kluth, Leupold, Reimann, Simon, Stonjek
 - meetings are public
- Mandate
 - oversight of IT operations
 - medium- and longterm planning
- Please consult before buying hardware or requiring services!

Rahmenverträge

- **MPG has procurement contracts for IT**
 - hardware, LAN, software, services
 - order without tendering procedure
 - (mostly) competitive prices (still check F&L or street prices)
 - Fujitsu, HP, IBM, Acer, Dell, Lenovo, Apple, ...
- **Experience**
 - good for standard orders
 - companies respond well

Summary

- MPP IT landscape continuously changing
 - rapid changes in hard- and software
 - Keeps IT staff busy
- Mass data storage at MPP growing fast
 - > 600 TB. CPU power? Management?
 - use ~~RZG~~ MPCDF cluster & storage (10GbE link to MPP)

Outlook: IT Plans for 2016

- Finish SSO Implementation on (almost) all computing clients @ MPP
- Phase out remaining 100MBps Ethernet in scientific environments.
- Evaluate Ubuntu 16.04. for desktop upgrade
- CEPH: Add storage, split nodes over 2..3 rooms
- Tivoli Backup**2 to MPCDF: Begin testing