

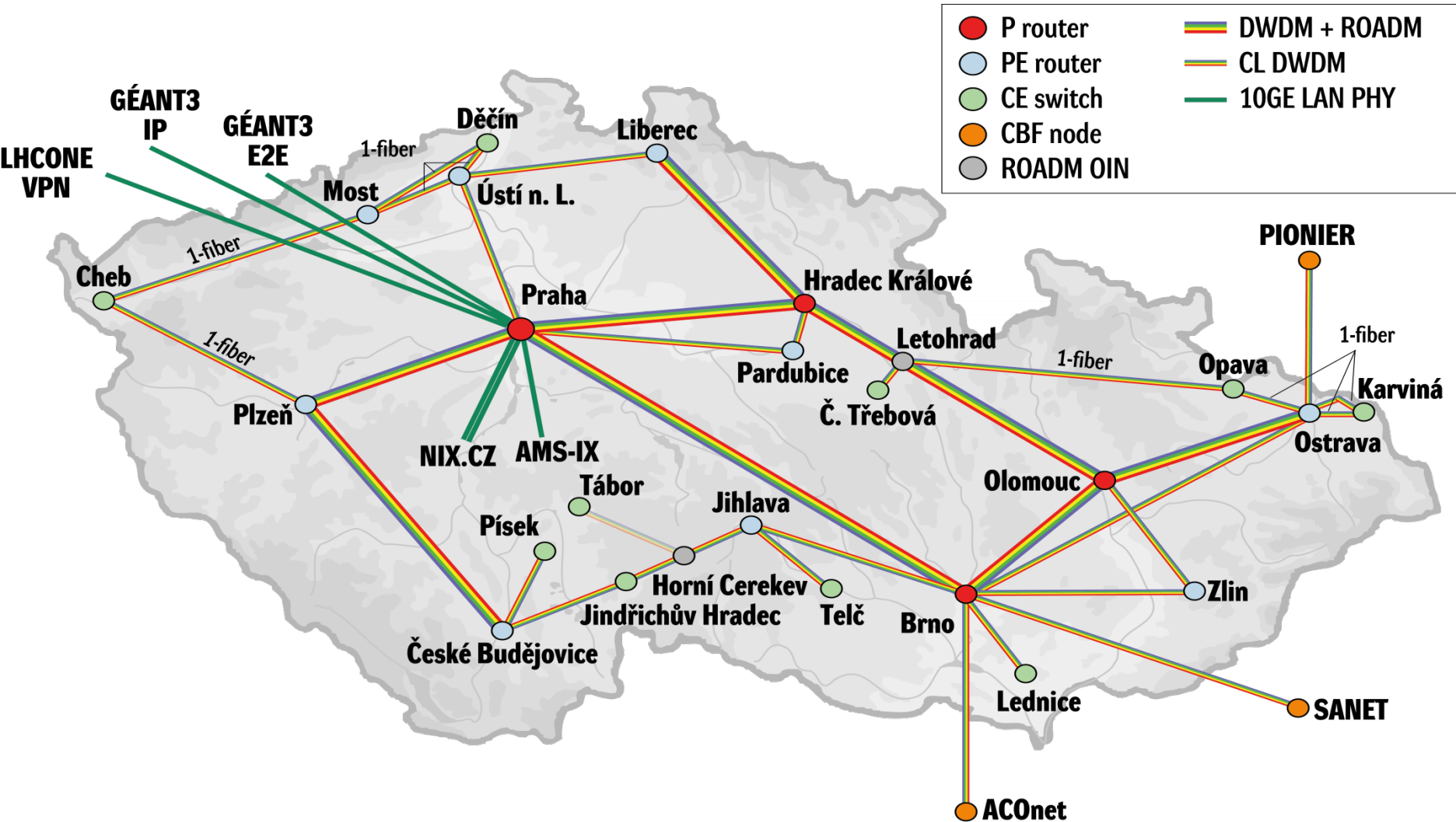
TF NOC Flash presentation

Petr Hanousek

petr.hanousek@cesnet.cz



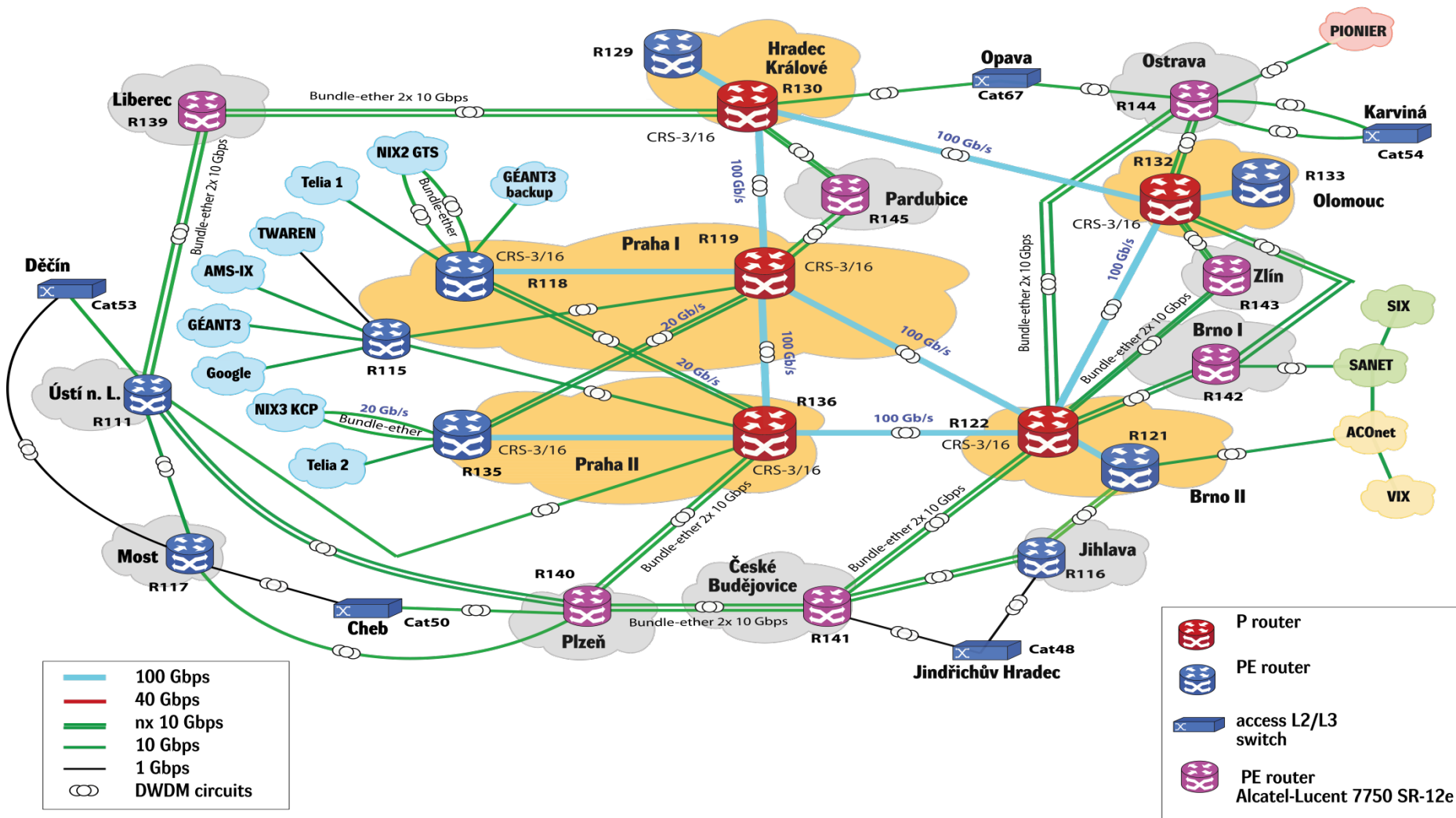
Network topology



Network

- Own equipment (Cisco + Alcatel Lucent) on leased dark fibres
 - 1gb + 10gb + 40gb + 100gb channels mix
 - Core built upon Cisco ONS 15454 MSTP, 2-fiber optical paths, 1410 km
- CzechLight OpenDWDM: own development WDM as a supplement cost effective technology
 - <http://czechlight.cesnet.cz>
 - Our technology, profiting on licences
 - 1 and 2-fiber optical paths, 2660 km

IP/MPLS CESNET2 layer



Services

- Connectivity
 - IPv4, IPv6, L2/3 VPN, Multicast, dedicated circuits, photonic services, lambda services, network quality monitoring
- DNS, NIC
- EduID federation, PKI, Eduroam, Foodle
- Videoconferencing, webconferencing, VOIP, videoarchive
 - Including 4k video streams
- Data storage
 - Large file transmission
- Massive computations (computing grid)
 - NGI as a part of EGI
- Time services

NOC structure

(define NOC)

- 24/7 helpdesk (monitoring), networking technicians have services
 - Also first line of solving security issues
- Centralized HelpDesk for networking and some other problems
 - Technician on phone at different country parts. In regular work time is emergency decentralized, out of „office hours“ is one centralized service
 - Grids have a separate HelpDesk

Tools

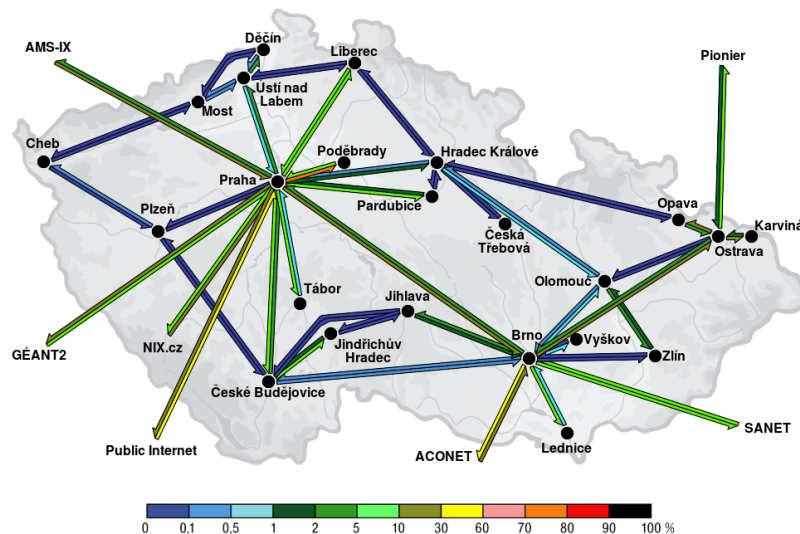
- Vendor tools:
 - HP OpenView (v9.2 linux install on vmware), CISCO Prime (LMS v4.24), Cisco tools (CTC), SAM5620 for Alcatel equipment
 - Also the maintenance of equipment configurations
- OpenSource:
 - Nagios (several instances with some hierarchy), RackTable (for Prague server rooms)
- Internally developed: Inventory Monitor, G3 (MRTG like tool), FTAS (netflow collector and analyzer)
- No integration except OpenSource tools
 - Login via CESNET account, other tools have local logins

Inventory monitor

- Based on automatical SNMP checks
- Contains service and purchase agreements as a supplement to inventory evidence
 - Locally stored, the central agreements storage is in progress
 - Reports on maintenance ending
- Daily configuration change reports
- Current equipment configuration
- Reports on HW changes of inventory

G3

SNMP based set of complex tools designed for large scale and continuous network infrastructure measurement visualization and reporting.



Link	Utilization (avr)	Capacity	Bitrate (avr)
Brno->ACONET	56.636 %	10.000 Gbps	5.664 Gbps
ACONET->Brno	25.003 %	10.000 Gbps	2.500 Gbps
Lednice->Brno	0.515 %	1000.000 Mbps	5.155 Mbps
Brno->Lednice	9.183 %	1000.000 Mbps	91.833 Mbps
Brno->SANET	8.803 %	10.000 Gbps	880.250 Mbps
SANET->Brno	7.616 %	10.000 Gbps	761.645 Mbps
Brno->Vyškov	0.906 %	1000.000 Mbps	9.062 Mbps
Vyškov->Brno	0.049 %	1000.000 Mbps	494.424 Kbps
Česká Třebová->Hradec Králové	3.153 e-3 %	1000.000 Mbps	31.534 Kbps
Opava->Hradec Králové	0.122 e-3 %	1000.000 Mbps	1.215 Kbps
Hradec Králové->Opava	0.620 e-3 %	1000.000 Mbps	6.202 Kbps
Hradec Králové->Česká Třebová	0.031 %	1000.000 Mbps	311.017 Kbps
Jihlava->Brno	1.208 %	10.000 Gbps	120.806 Mbps
Brno->Jihlava	2.337 %	10.000 Gbps	233.690 Mbps
Česká Budějovice->Jihlava	0.582 e-3 %	10.000 Gbps	58.103 Kbps

FTAS

An experimental system designed for generic analysis of flow-based traffic data.

- Statistics based on Netflow v9
- IPv4, IPv6, unicast, multicast
- Basic tool also for CSIRT

Front end

- Our users are non-commercial organizations and single scientists
 - Universities, government, libraries, hospitals, science groups and projects (ELIXIR), ...
- SLA experiments but it is not common
 - SLAs are for our suppliers
- Frontend tools
 - Bestpractical's Request Tracker
 - Informational webs (trying to consolidate them)
 - CRM disputes

Inter-NOC communication

- How do your NOC communicate internally and with other groups in your organization?
 - Mail (RT), phone, videoconference
- How does your NOC communicate NOCs outside your organization?
(e.g. provider and/or customer NOCs)
 - Webex with Cisco, RT queues
- Which tools are used to facilitate inter-NOC communication?
 - Phone (voip), mail

Documentation

- What information do your NOC document?
 - Internal networking documentation in shared directory
 - Wiki (mainly other CESNET departments)
- Which tools are used to create and update documentation?
 - Local tools, mainly Visio and MS Office, no central DMS
 - Inventory monitor (automatic HW evidence via SNMP)
 - Configuration, supplier contracts
- Do you have any Best Practice Documents available to share?
 - Cisco Advanced Services (QBR) under MDA (not publicly available)
 - Public technical reports
 - Some internal howtos located in shared directory

Thank you!
Questions?

Petr Hanousek
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