JINR network infrastructure (Current status)

Anton Balandin
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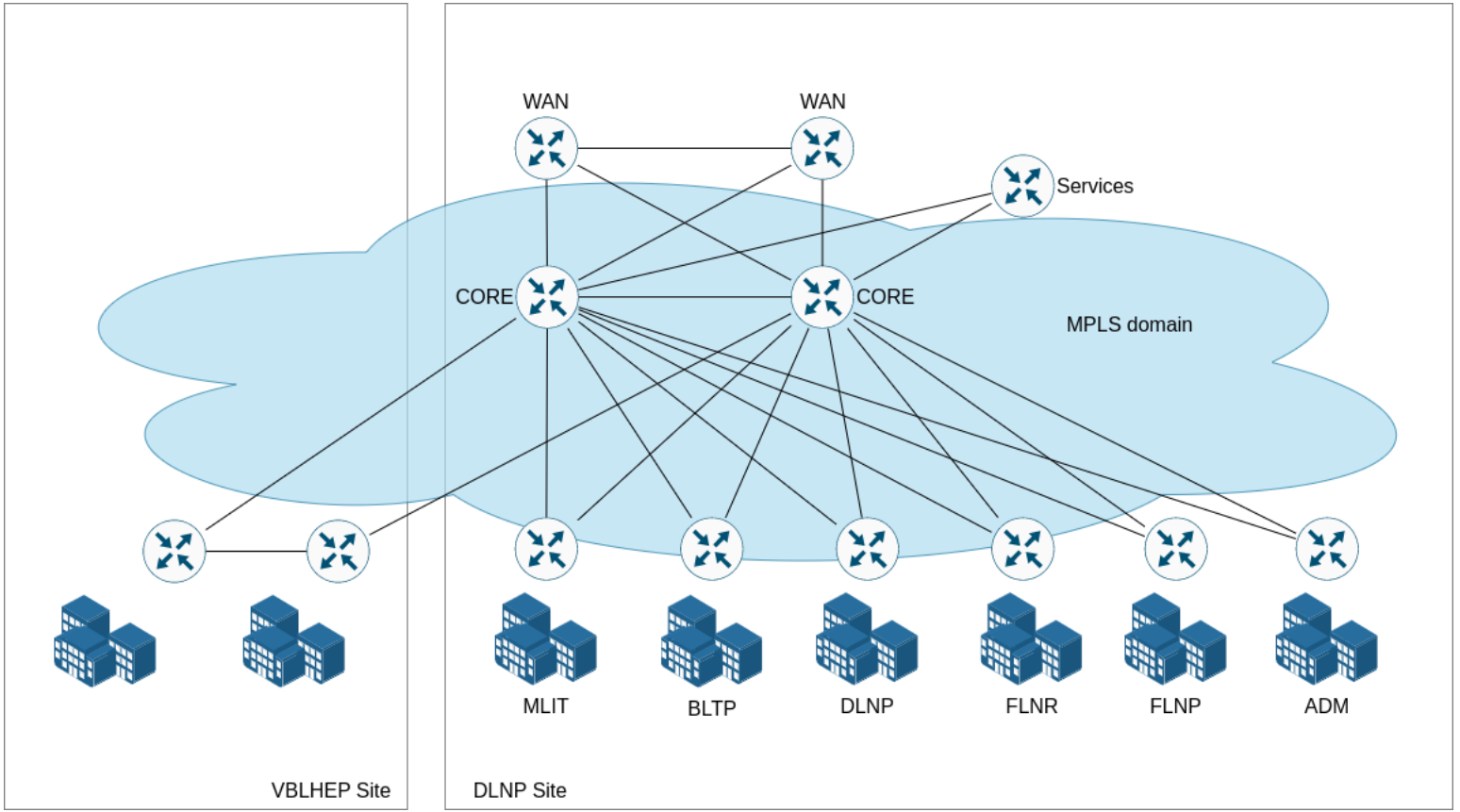
Backbone, campus



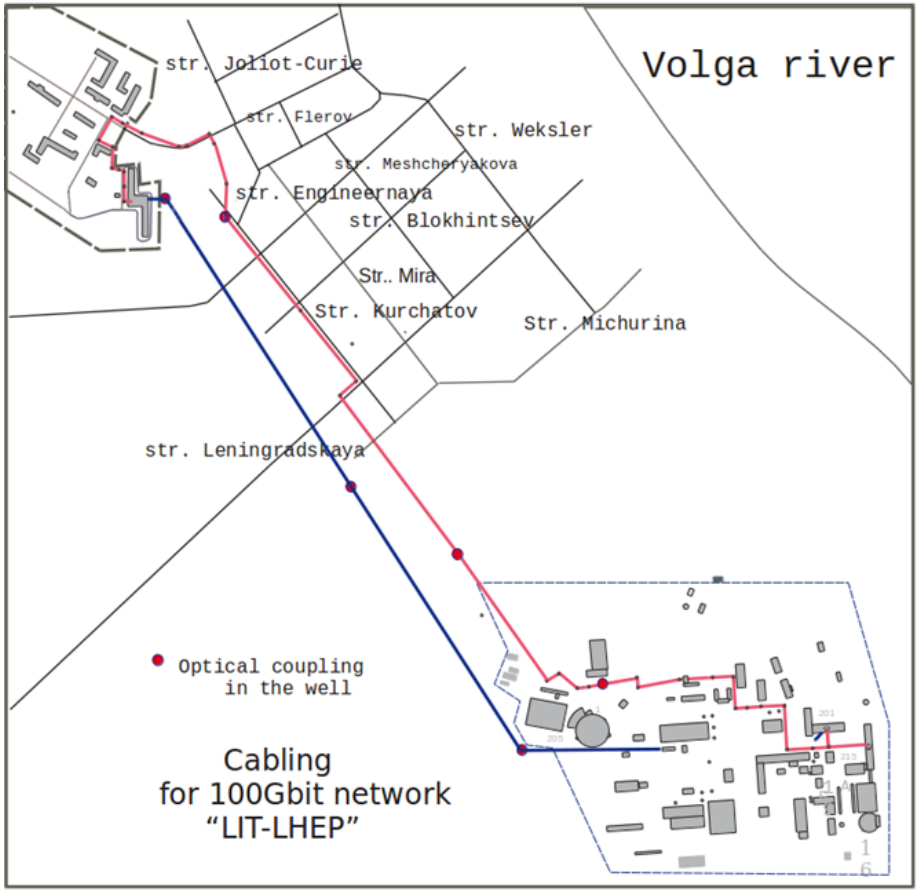
Labs: Cisco C9500-32C
Core: Cisco NCS-5011
WAN: Cisco ASR1006-X

100G and 40G links

MPLS network:
- Scalability
- Flexibility

MP-BGP:
- Layer 3 VPN
- Layer 2 VPN
- IPv6 over IPv4 MPLS(6VPE)

DLNP / LIT – VBLHEP

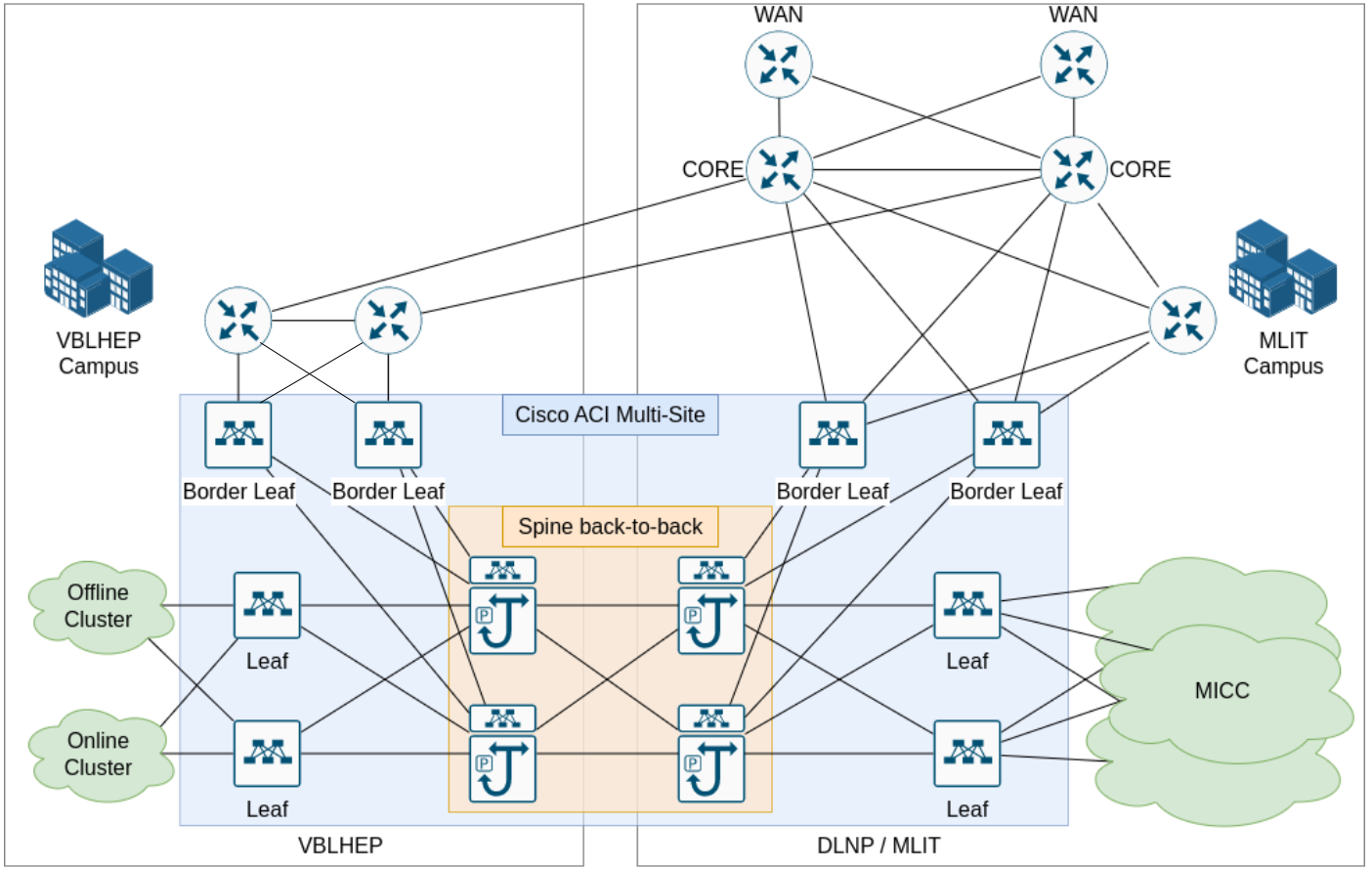


Two independent fiber-optic cable lines between DLNP/LIT and VBLHEP sites.

Reliable communication for:

- NICA complex
- Multi-Site cluster
- VBLHEP campus

ACI Multi-Site cluster network



Cisco Application Centric Infrastructure(ACI) fabric

Inter-site topology:
spine back-to-back 4x100G link between MLIT and VBLHEP

Plans to migrate from a back-to-back topology to the routed inter-site network (scalability)

10G, 40G and 100G client ports

Fabric nodes:

Spine
- 4xNexus C9504

Leaf
- 12xNexus C9336C-FX2
- 4xNexus C93180LC-EX
- 2xNexus C93180YC-EX

Dubna – Moscow

Infinera TM-3000/II

Infinera TM-301/II

Two independent fiber-optic lines between MLIT and Moscow,M9

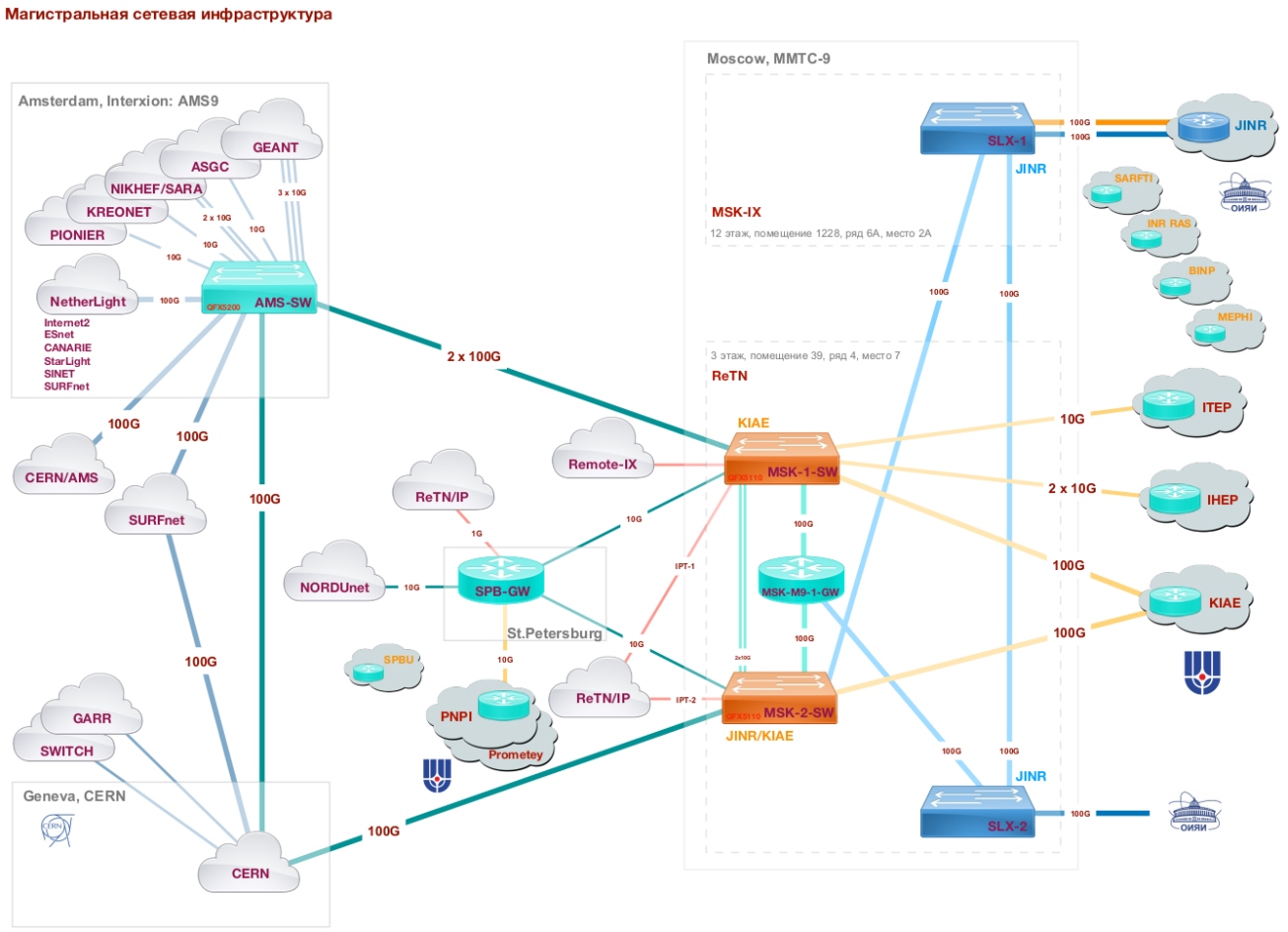
Two DWDM installations based on Infinera XTM series:

1) 2 spans with inline amplifier
   - TM-301/II chassis – Inline amplifier
   - TM-3000/II chassis – Terminal nodes
   - 1 x 100GbE MuxPonder – Up to 12 x 10G client ports
   - 1 x 400G OTN Flexponder – Up to 4 x 100G client ports
   - 2 x 100G channels in operation

2) 1 span with Hybrid Raman/EDFA amplifiers
   - TM-3000/II chassis – Terminal nodes
   - 2 x 400G OTN Flexponder – Up to 8 x 100G client ports
   - 1 x 100G channel in operation

Backup – 4 x 10G

External backbone



Backbone of NRC KI and JINR network

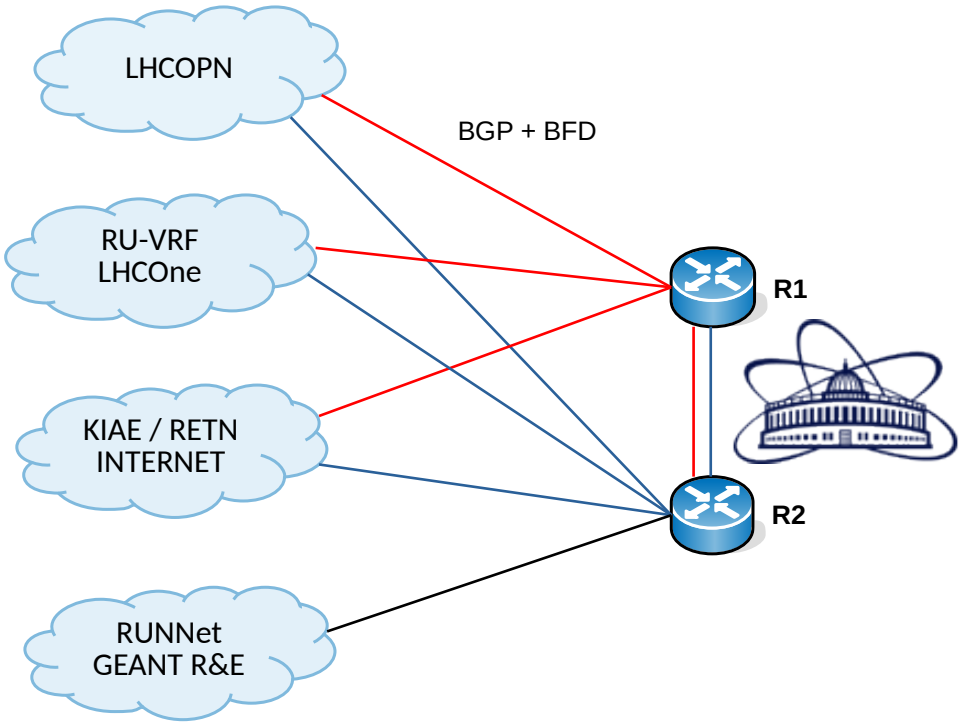
Main channels:

- 100G Moscow – CERN (Geneva)
- 2 x 100G Moscow – Amsterdam
- 100G Amsterdam – CERN (Geneva)
- 100G Amsterdam – CERN (Amsterdam)

Services:

- LHCOPN
- RU-VRF / LHCOne
- IP Transit / Internet

WAN



All IPv4 and IPv6

LHCOPN

- 2 direct links with CERN (Primary/Secondary)
- Backup via KIAE

RU-VRF / LHCOne, Internet

- Each has 2 links

Thank you.