

SANReN

Network overview.

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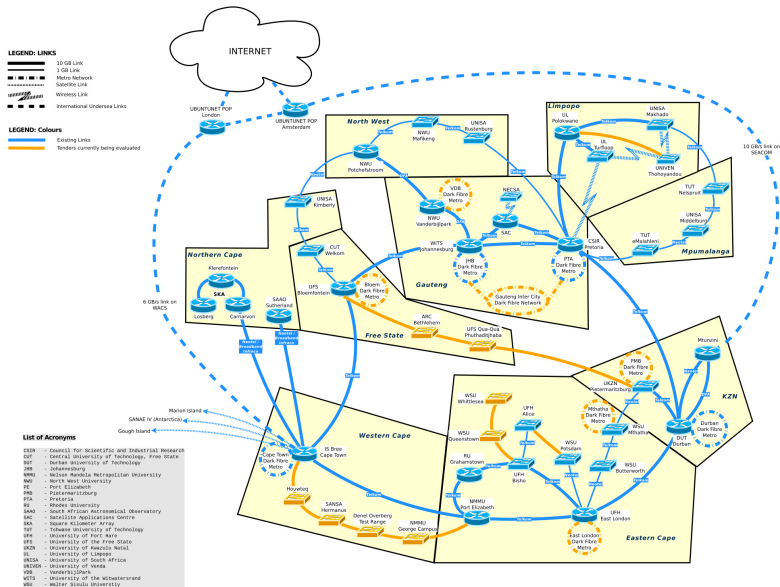
- Vision and funding: Ministry of Science and Technology
- Design and build: CSIR Meraka Insitutute
- Operate: TENET (university owned ISP)
- Use: Beneficiary institutions

- TENET: based in Cape Town and Johannesburg (about 12 people)
- SANReN: based in Pretoria (about 14 people)

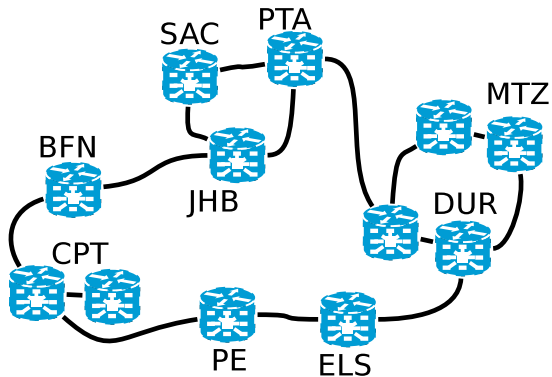
Scope and objectives

- Connect HEI and Research councils (DST list)
- Establish national back-bone to interconnect major cities
- Build metro networks to connect end sites to PoPs (1Gbps or 10Gbps)
- Extend network to smaller towns and cities
- Develop and deliver services over SANReN
- Interconnect internationally

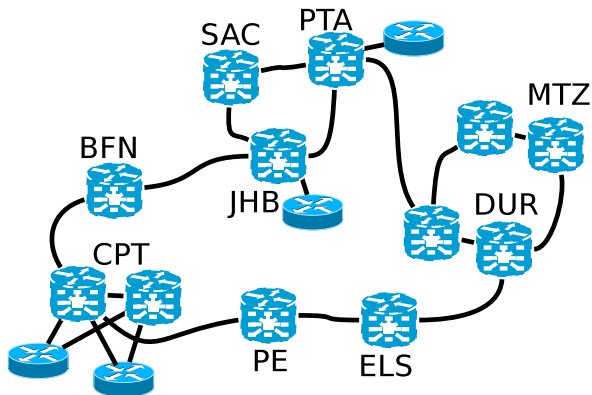
SANReN map



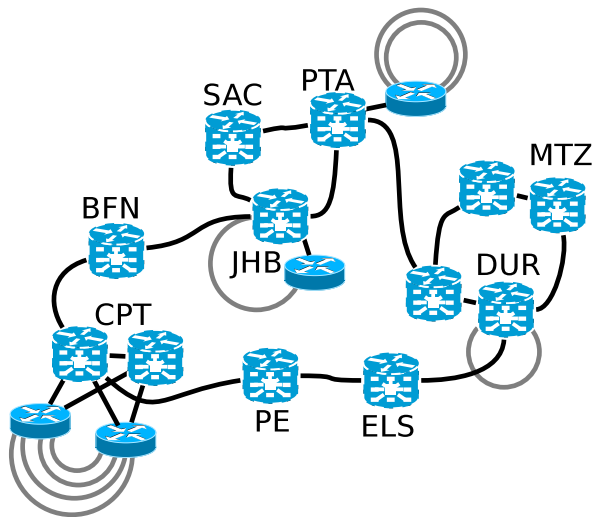
- Mixture of MPLS and Metro-Ethernet
- Core: Cisco CRS-1
- Distribution: Cisco 7600 and ASR9K
- Access: Cisco ME4924 and ALU 7210SAS-M
- Optical Transmission/Access: Cisco DWDM (ONS15454 MSTP)



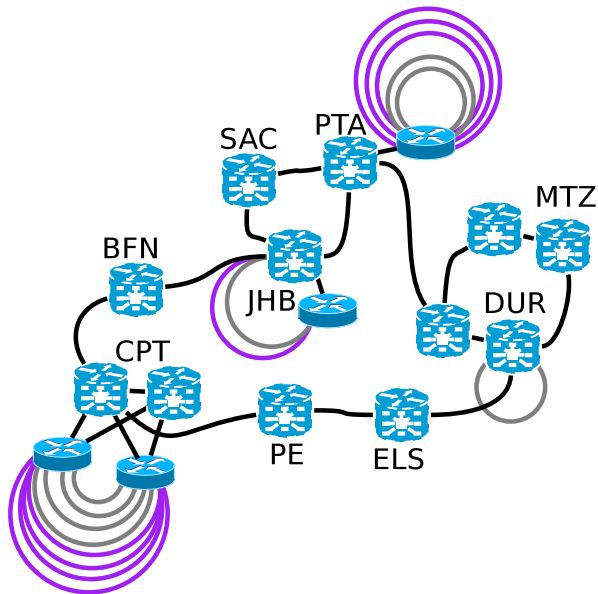
Core+Edge



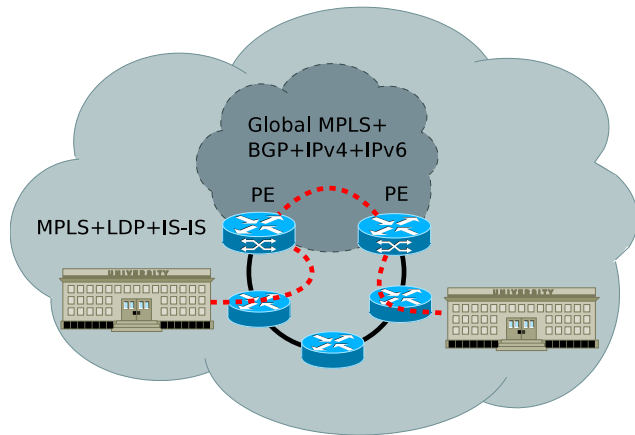
Core+Edge+Grey Rings



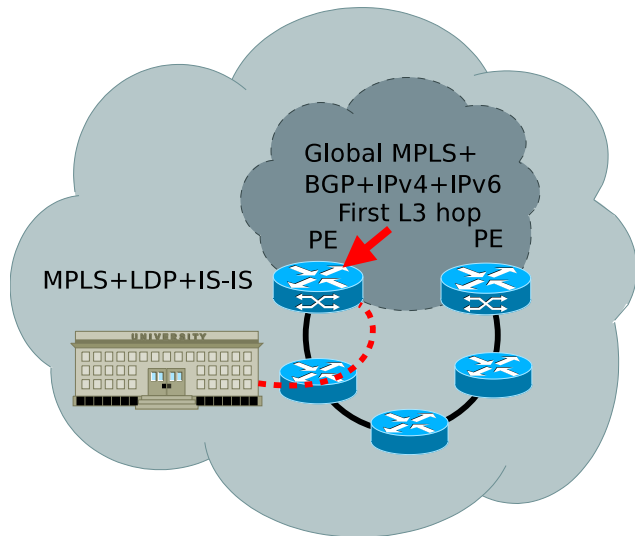
Core+Edge+Grey Rings+DWDM sites



L2 configuration

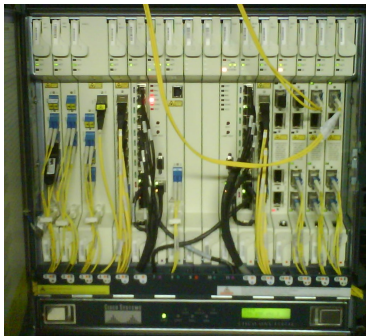


L3 configuration



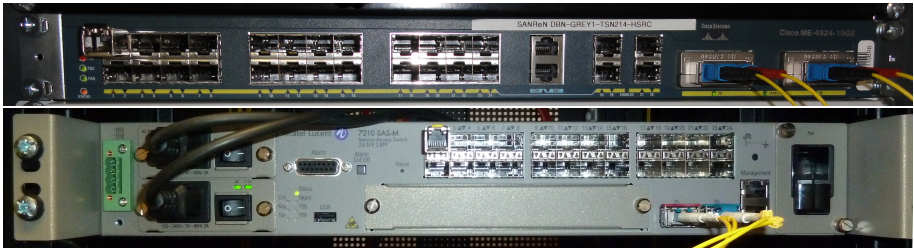
Optical transmission

- Large research sites on dedicated 10G ports:
 - DWDM: TUT, UP, UNISA, UJ, UCT, UWC, SUN, iThemba Labs
 - Directly connected: WITS, CSIR, UFS, CHPC
- Backbone is still shared!
- Interface: 10GBase-LR



Grey rings

- Shared 10Gbps rings (1Gbps customer ports)
- Interface: 1000Base-X (T, LX, SX)
- Can bond multiple 1Gbps interfaces, or provision them independently
- Alcatel accepts module for additional two 10Gbps ports if required



- TENET Internet access
 - Highly available gateway address: static routing or BGP
- Layer 3 VPN (no takers yet)
- Layer 2 VPN
 - Point-to-point: Pseudo-wires, aka Ethernet-over-MPLS (the workhorse)
 - Multi-point: VPLS (virtual Ethernet switching - no takers yet)
- VPN services can be used in different ways:
 - Replace physical WAN circuits to SANReN-connected remote sites
 - Private interconnection between institutions (DR agreements, research projects)

Focus of our services effort

- Idea is to help institutions leverage the network
- Requirements depend on who is asking:
 - IT departments are proxies for their customer's needs (needs: cloud computing, DR, identity federation, mail filtering, etc)
 - Research communities are special customers (support SAGrid, dedicated circuits for science (light-paths), etc)
- Some are low hanging fruit (Eduroam)
- Others are non-trivial, and maybe not worthwhile (VoIP?)

Focus of our services effort cont

- Federated Identity (FID)
 - Work in progress, work group project managed by Siju Mammen (smammen@csir.co.za)
- Perfsonar
 - Has solved a lot of bottlenecks on the network, most times from the client's side of the network
 - Helps us help the customer
 - Lead by Roderick Mooi (rmooi@csir.co.za)
- CSIRT (Security Incidence Response Team), some call it CERT
 - Work in progress, security initiative led by Roderick Mooi as well

Conclusion

- Questions?
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