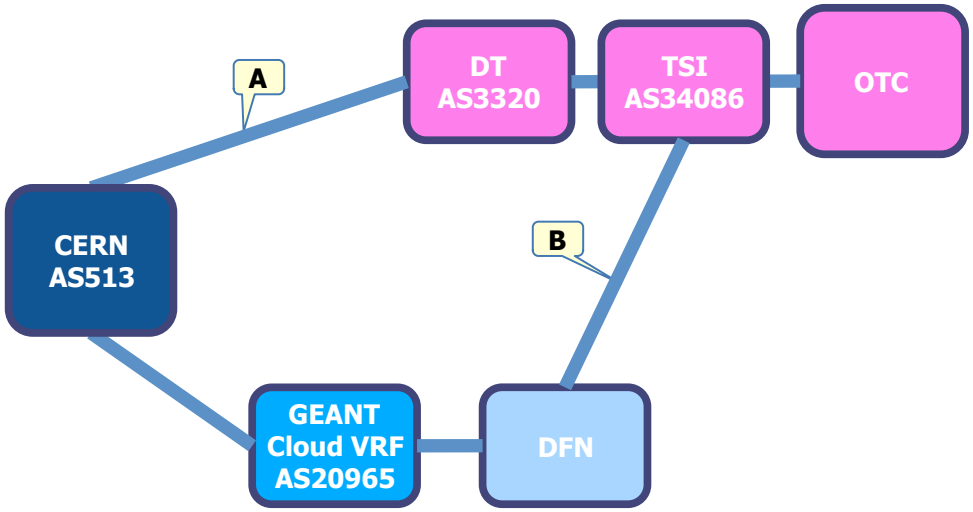
T-Systems
Network evaluation

28 June 2016

Network topology



Two options available:
a) Existing 8Gbps Internet upstream (paid by CERN for Internet access)
b) Peering with GEANT Cloud VRF through DFN

T-Systems agreed to un-cap option a) to 10Gbps at no cost for CERN

WAN connectivity options

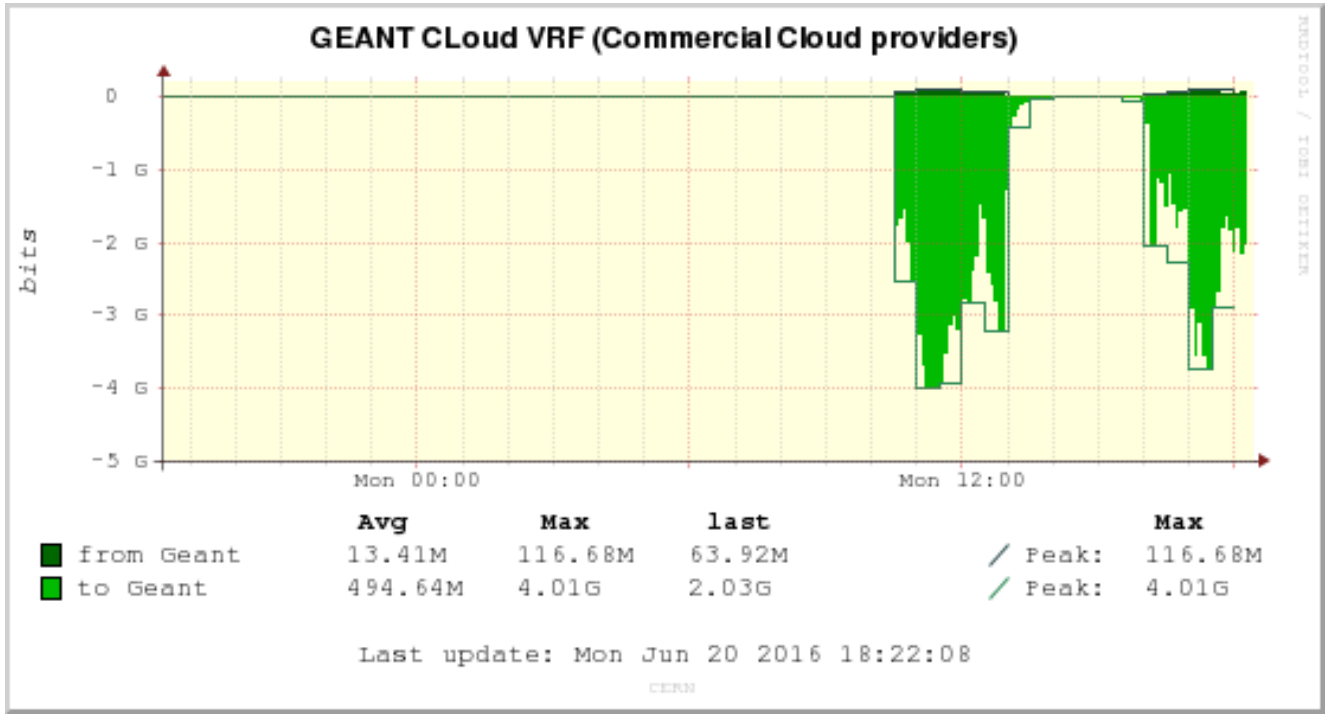
a) public Internet via T-Systems
b) Research and Education networks, via GEANT and DFN

Only b) has been tested so far

Load tests will be run to compare the performance of the two options

Performance of a single VM is limited to 500Mbps (CERN -> T-Systems) and 300Mbps (T-Systems -> CERN)

Performance



VMs' IP addresses

VMs are generated with private IP addresses

They can reach CERN via:
a) 1:1 NAT with a T-Systems public IP address
b) routed through VPN (IPsec tunnel)

Option b) has been disregarded (see next slide)

Public IP addresses are not contiguous but at least taken from a single large prefix

VPN

T-Systems can only support IPsec (crypted) tunnels. Crypted tunnels reduce considerably the achievable throughput. In addition CERN doesn't own an IPsec tunnel termination device capable of 10Gbps.

T-Systems VPN solution is limited to 50Mbps

For these reasons, the VPN has not been tested

Next procurements, IPsec VPN tunnel should be ruled out.

DNS

For storage servers, it's important that the public IP addresses have reverse resolution matching the direct name.

T-Systems has agreed to implement reverse resolution for their addresses with .cern.ch names

Questions?