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	STUDY COMMITTEE D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

2017 Colloquium
September 20 to 22, 2017
Moscow – RUSSIA

Preferential Subject
PS3

Investigation into the use of IP-MPLS network to service OT services

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Eskom embarked on a proof of concept (PoC) to determine if an IP-MPLS network can be used to provide mission critical operational technologies (OT) services such as tele-protection, tele-control, etc. The reason for this is due to obsolescence of the existing multiplexers, which are used to provide OT services.

The engineering brief for the POC included but not limited to:

- Network and Quality of service (QoS) testing: Key issues to be investigated included but not limited to:
 - Are legacy interfaces (x.21, rs232, etc) and new interfaces as used by Eskom supported by the IP-MPLS network.
 - Can the QoS requirement of some OT services be met by the packet-based network
 - Will fast reroute convergence time be similar or better than traditional TDM networks.
 - Can the selected network elements interoperate with third party network elements and the existing multiplexers.
 - How will the packet-based network perform when integrated with the existing transport network.
- Network security: Packet-based networks have security issues that can compromise the network if not adequately addressed. An investigation on how these security concerns are addressed need to be undertaken to ensure that they will be successfully mitigated once an IP/MPLS network is deployed.
- Electromagnetic compatibility: The network equipment to be used need to meet the utility's communications requirements even under harsh high-voltage (HV) substation environments.
- Network management: Investigate whether the network management platform offering is equal or better than the network management platform for the multiplexers.

This paper deals with bullet number 1 above and present the outcomes of the network and QoS testing focusing specifically on the following:



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- Interoperability with the existing multiplexers.
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