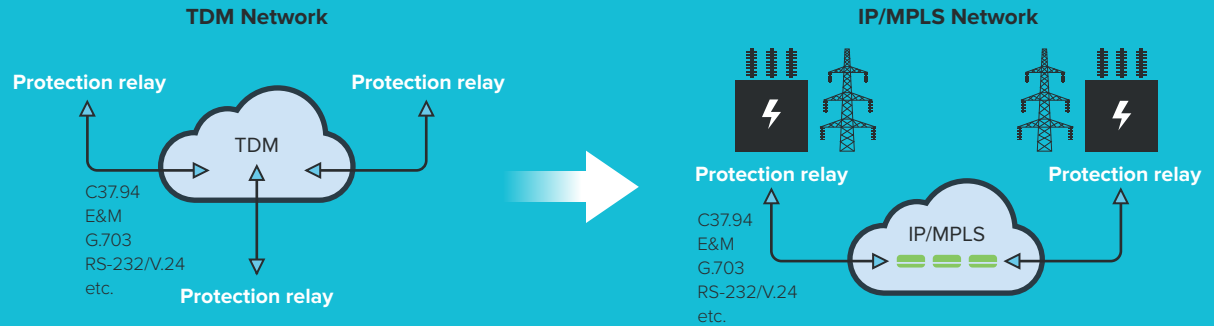


Ensuring power network stability when making the switch to IP/MPLS

The Modernisation of Power Grids

New regulations, smart grid technologies and the growth in data is driving the modernisation of power grids and transforming their communications networks. The big change is a drive to switch from TDM Networks to packet-based technology such as IP/MPLS networks. However, making the switch safely, reliably and without compromise can be a challenging task.



The Old Network – TDM technology is being phased out due to its limited ability to transport the volume of data that needs to be carried. Nevertheless, TDM-based protocols are still widely used in legacy applications like teleprotection.

Teleprotection is critical to protecting the grid and increasingly intelligent devices are being used to detect and protect the grid against surge or fade in supply. However, to perform safely it requires strict low latency on the network.

Packet-based networks (IP/MPLS) provide the scale needed to transfer large amounts of management data across the network. However, these are open to impact from impairments which can cause delay and this can potentially cause damage to the grids, power outages to customers and potential safety issues.

Safely making the switch – To make a switch safely there are a number of areas that need to be addressed prior to any deployment including the need to:

- Select optimal vendor solutions (QoS/Relay/IED Manufacturers)
- Configure and validate device interoperability
- Validate safe operation of critical systems

Adding Network Emulation to the testbed you can address these challenges by testing in the lab before any changes are made to the live network. The Calnex SNE sits between the communication nodes and introduces impairments such as asymmetrical delays, dropped, corrupted and reordered packets.

The IED/Relay performance and resilience on the degraded network is then measured and understood, providing insights to inform decision making on the optimal solution to deliver network stability upon migration to an IP/MPLS network.

