



GMPLS in GÉANT2

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GMPLS in Alcatel MCC

Generic MPLS Routing Engine – GMRE

- Distributed control plane in the 1678 MCC
- Installed on top of the 1678MCC OS

Management

- CLI
- ASON manager – operates on top of the 1354 RM



Technology used

Routing

- RFC 4202 compliant
- OSPFv2 - RFC4203
- Different OSPF instance for control plane and data-plane

Signalling

- RFC 3471 compliant
- G-RSVP as described in RFC3473
- signalling is done via DCC channel or an external control channel network can be involved.



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Topics of interest

- Type of interfaces
- Provisioning
- Protection mechanism
- Hybrid node



Type of interface

- NNI
 - Production code
- OIF-UNI 1.0
 - Supported
 - Several inter-op tests
- OIF-UNI 2.0
 - Supported in experimental code
- E-NNI
 - Supported in experimental code



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Provisioning

GMRE network can support multiple path initiators

- Client devices using UNI interface can create Switched Connections (SC)
- Paths initiated by the NMS can create Soft Permanent Connections (SPC)
- Other providers networks via E-NNI
- Other vendor NE – same provider – I-NNI



Protection

Un-protected

- The LSPs are unprotected and not restored upon a failure

Source Based Restoration

- Protection based on a fully dynamic scheme

Guaranteed Restoration

- 1+1 protection, where the resources are booked in the control plane and cross-connected in the data-plane.

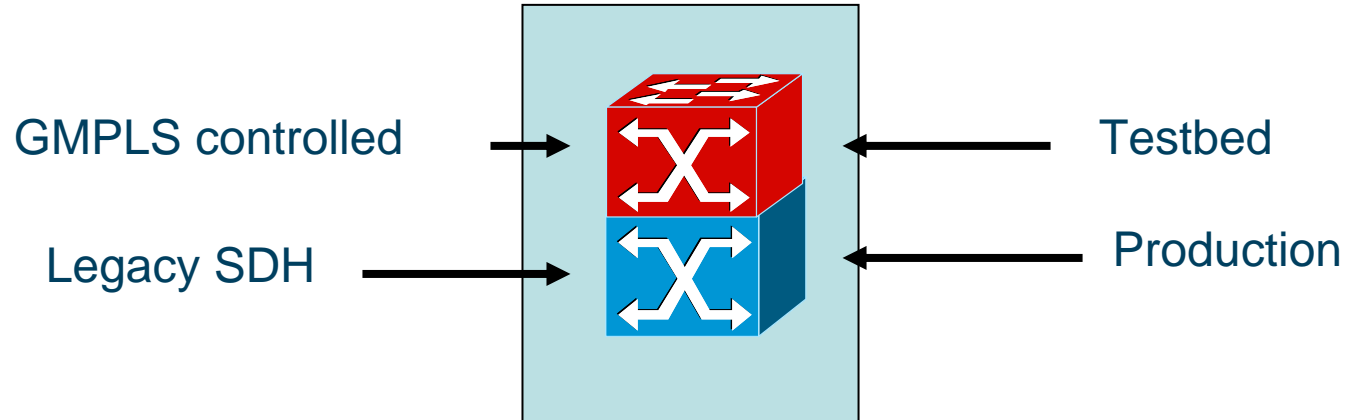
PRC – protection and restoration

- Backup route booked in the control plane but not cross-connected in the data-plane
- Resource sharing for the backup paths is possible.



Hybrid node

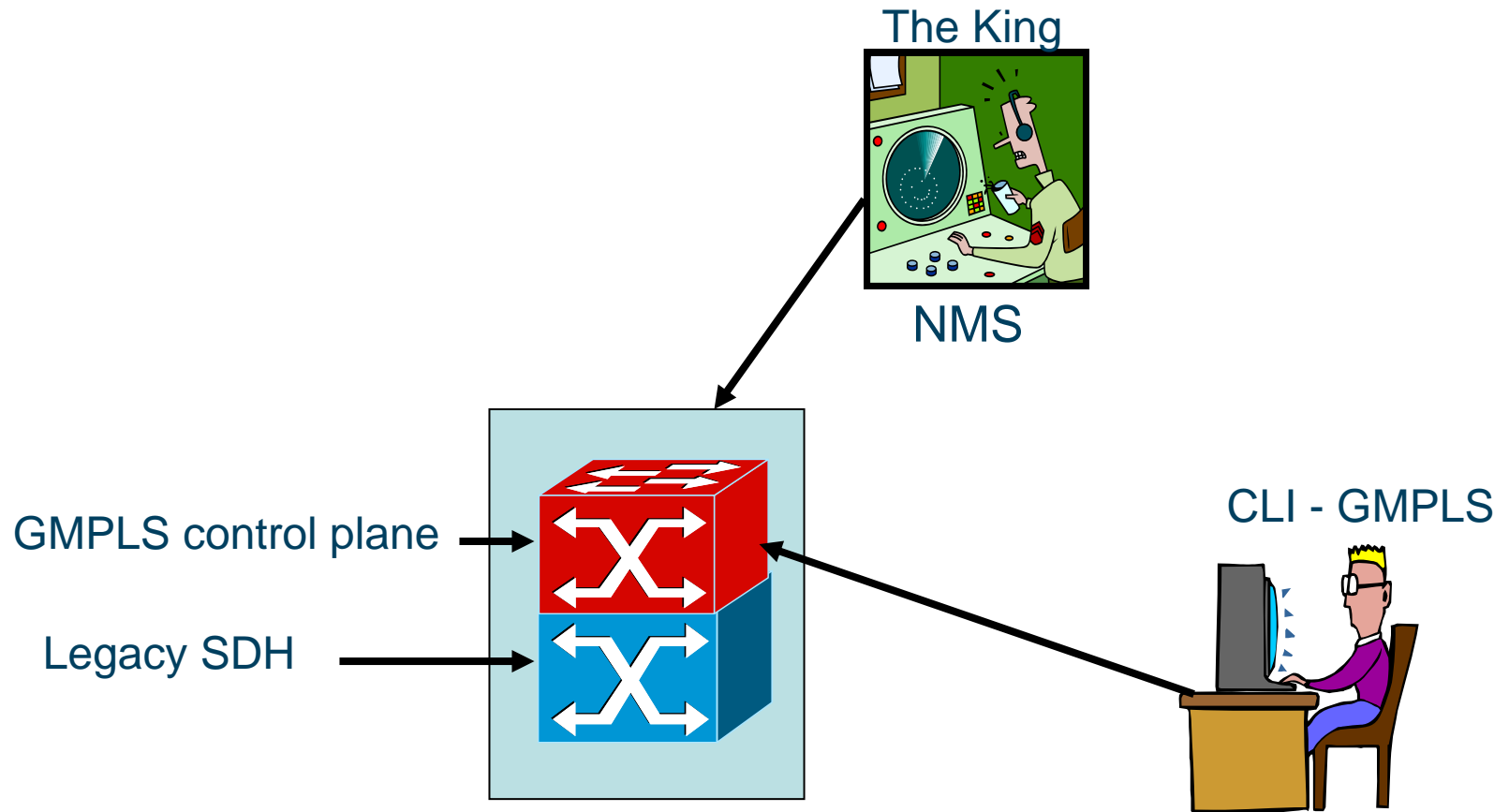
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Hybrid node ownership

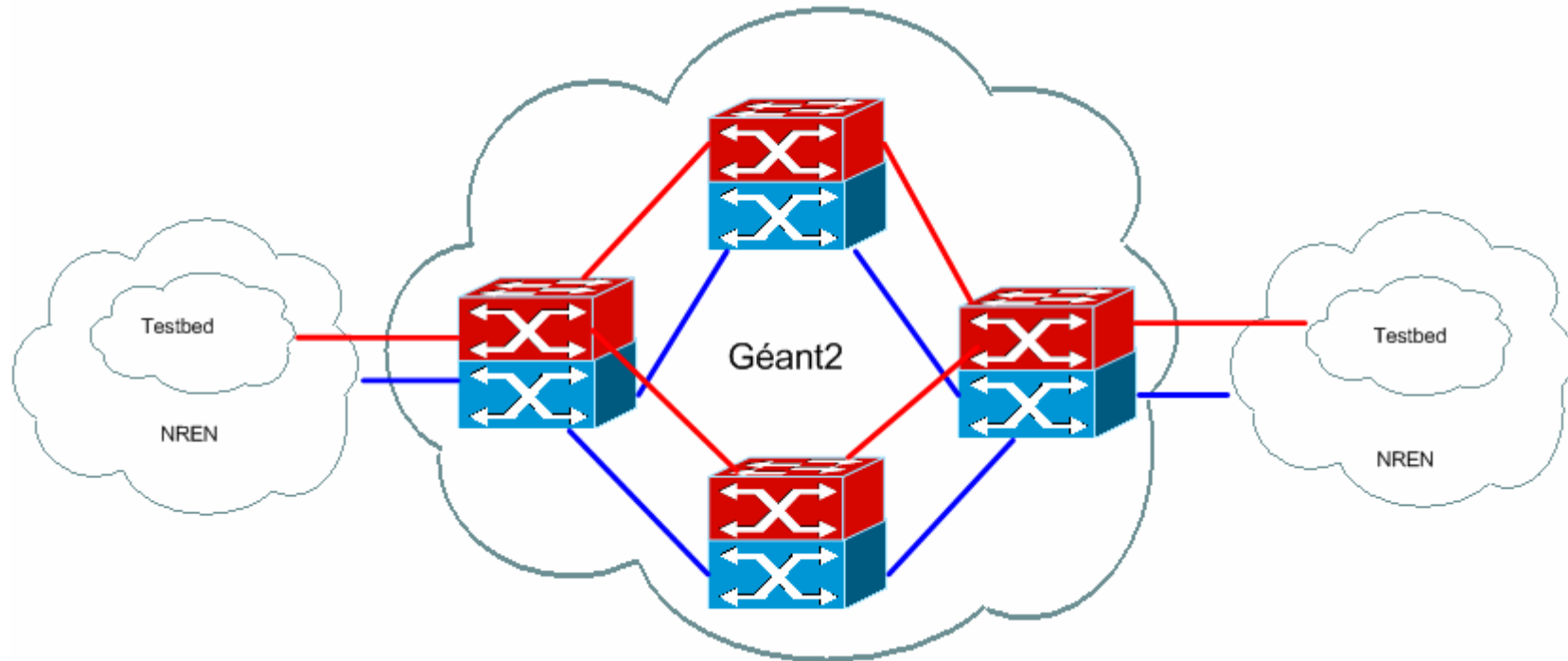
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Interconnection with other testbeds



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MRN/MLN

Alcatel 1678MCC Interface Switching Capabilities:

- TDM
- Ethernet L2SC

GMPLS control plane available for the TDM region

GMPLS controlled Ethernet Label Switching under discussion in the IETF.

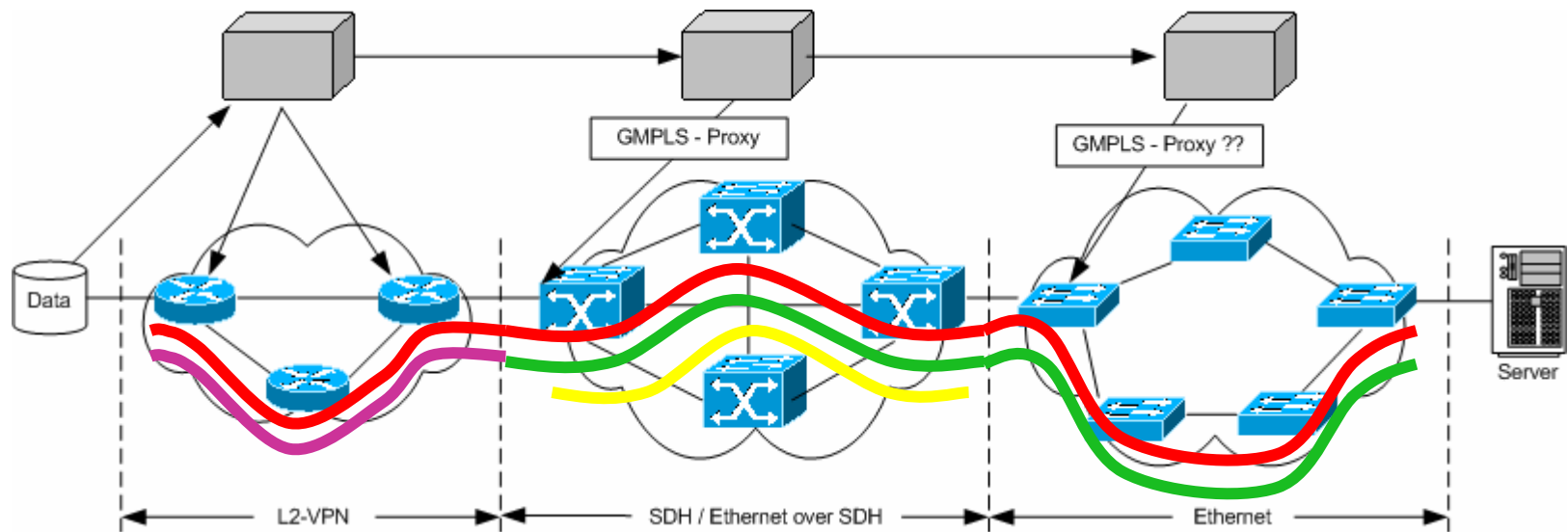
A single GMPLS control plane instance for multiple regions (TDM and Ethernet) Multi Region Network.

- "triggered signalling" for lower layers.

Multi-domain/Multi-region operation



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Conclusion

- A GMPLS test session will be held end of January at Alcatel facilities.
 - Objectives are to better understand the GMPLS operational aspects
 - See how the hybrid node should be used
- MRN/MLN are future work but of utmost importance for our community.
- A dedicated testbed for Géant2 will help a lot.