Multi-Vendor Interoperability Testing Results Update to RTGWG

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Multi-Vendor Interoperability Test Areas

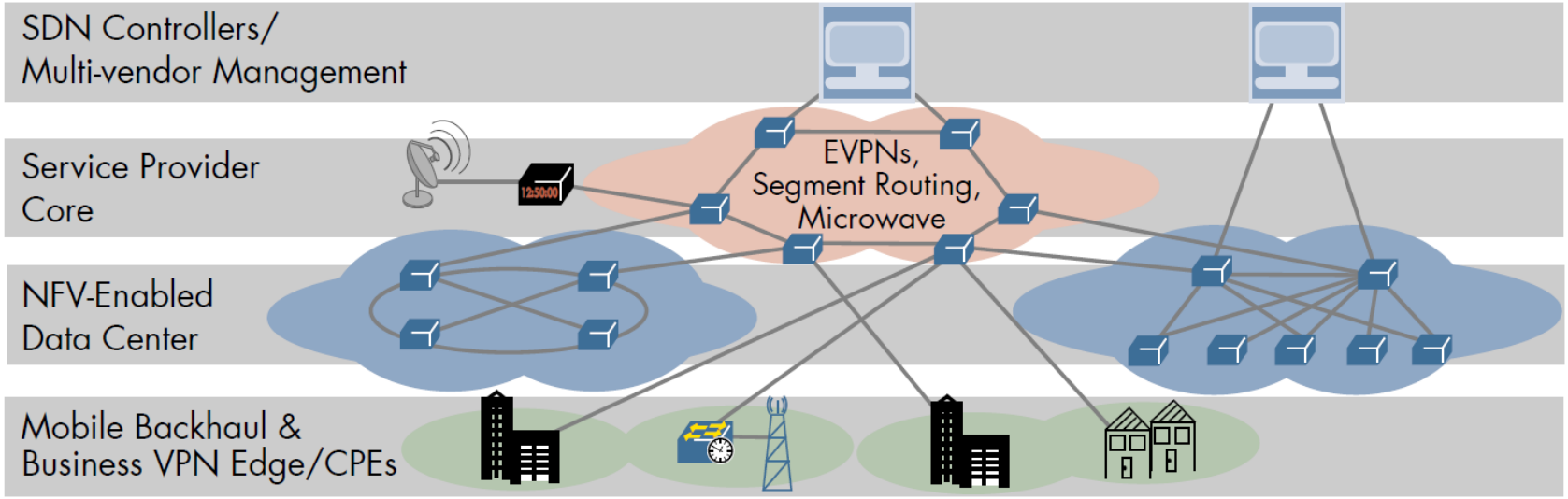
Data Center Interconnection

Software Defined Networking (SDN)

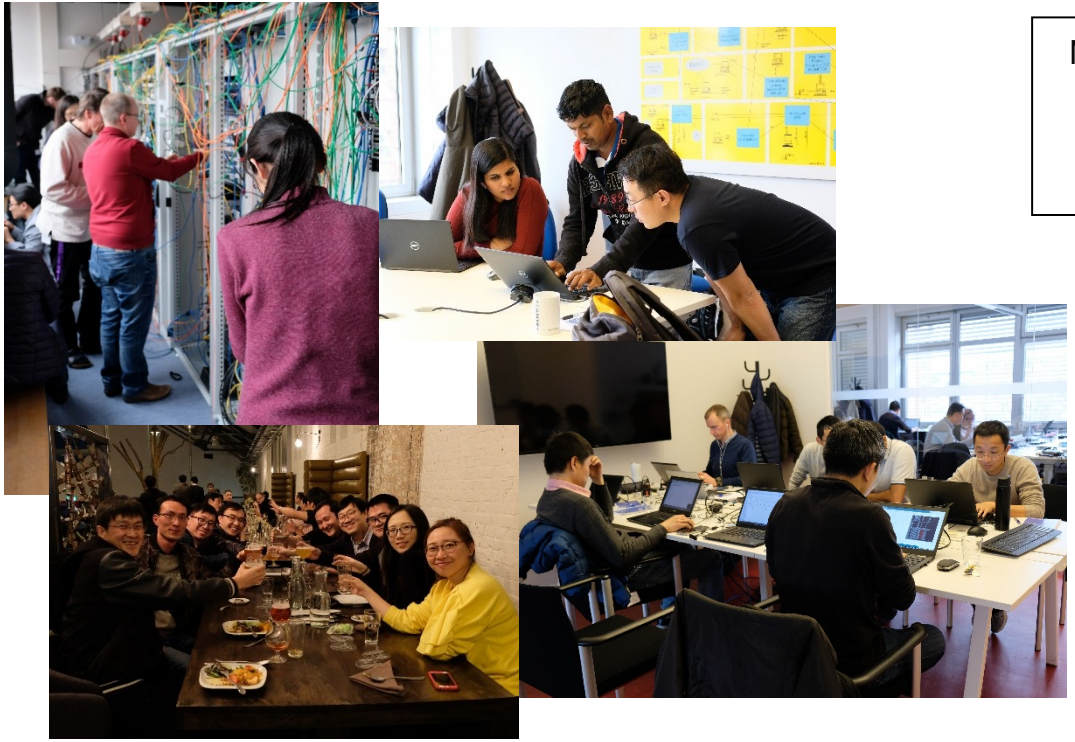
Core Network Simplification

Clock Synchronization

Microwave



Hot Staging



March 5-16: Hot Staging
at EANTC, Berlin
with 21 vendors,
75 engineers

March 2018 → April 2018

MPLS+SDN
+NFVWORLD
@PARIS2018

Segment Routing – Fast Reroute & TI-LFA
Introduction

IETF drafts:

- draft-bashandy-rtgwg-segment-routing-ti-lfa
- draft-bashandy-rtgwg-segment-routing-uloop

- We evaluated vendor readiness in a Segment Routing enabled network, in both options SR-MPLS and SRv6 data-plane
- We tested 12 vendor combinations and used IS-IS with SR extensions in all test runs

Segment Routing – Fast Reroute & TI-LFA
Setups 1 & 2

We set up a ring topology and sent bidirectional traffic between Traffic Generators (TG) 1 and 2

Upon an emulated link failure (LoS) we tested:

- FRR/LFA: Unicast traffic from TG2 to TG1 was rerouted through Node 3. Only Node 1 SID was required to guarantee a LFA
- TI-LFA: Unicast traffic from TG 1 to TG2 was rerouted through Node 3, requiring Node 3 & Node 4 SIDs insertion into the packets

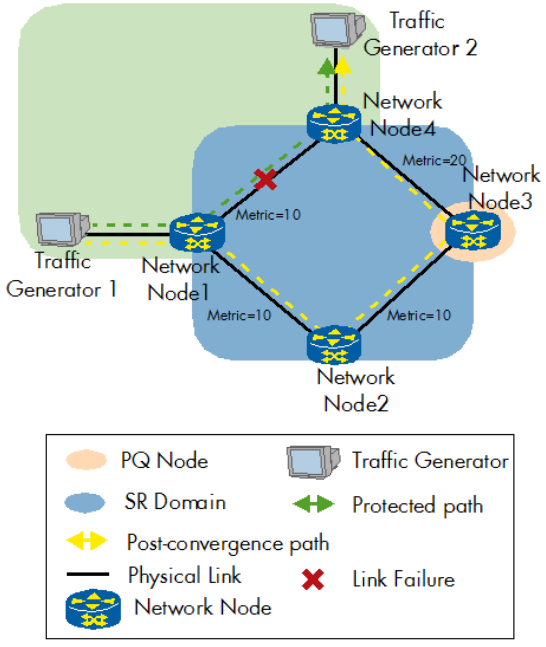


Figure 6: SR Fast Re-Route and TI-LFA

Segment Routing – Fast Reroute & TI-LFA
Setup 3

We added a cross link between Nodes 1 and 3 to the existing topology and we configured a Shared Risk Link Group (SRLG) as depicted in the diagram

Upon an emulated link failure (LoS) we tested:

- TI-LFA + SRLG: Unicast traffic from TG 1 to TG2 was rerouted through Node 3 requiring Node 3 & Node 4 SIDs insertion into the packets. Link 2 was not considered for the alternate path calculation

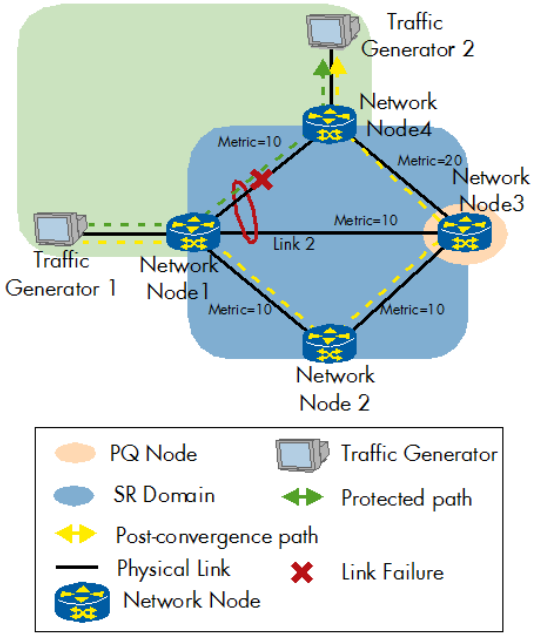


Figure 6: SR Fast Re-Route and TI-LFA

Segment Routing – Fast Reroute & TI-LFA
Findings

- All tested vendors supported FRR/LFA
- About half of them supported TI-LFA, where pushing an additional SID for Node 2 was required
- Only one vendor supported TI-LFA with SRv6 data-plane
- Only one vendor was able to test TI-LFA with SRLG constraints for calculations
- Test equipment supported all combinations but they could not be used as transit nodes

MPLS+SDN+NFV World Congress 2018

Detailed white paper with all results will be published on April 10th

www.eantc.de/en/showcases/mpls_sdn_2018

In addition to rtgwg, drafts of other IETF WGs were covered:

- 6man (for SRv6)
- mpls (for LSP ping / traceroute)
- spring (for PCE)