

TRILL/802.1aq activity

LHCOPN and LHCONE Joint Meeting

Stockholm, Sweden

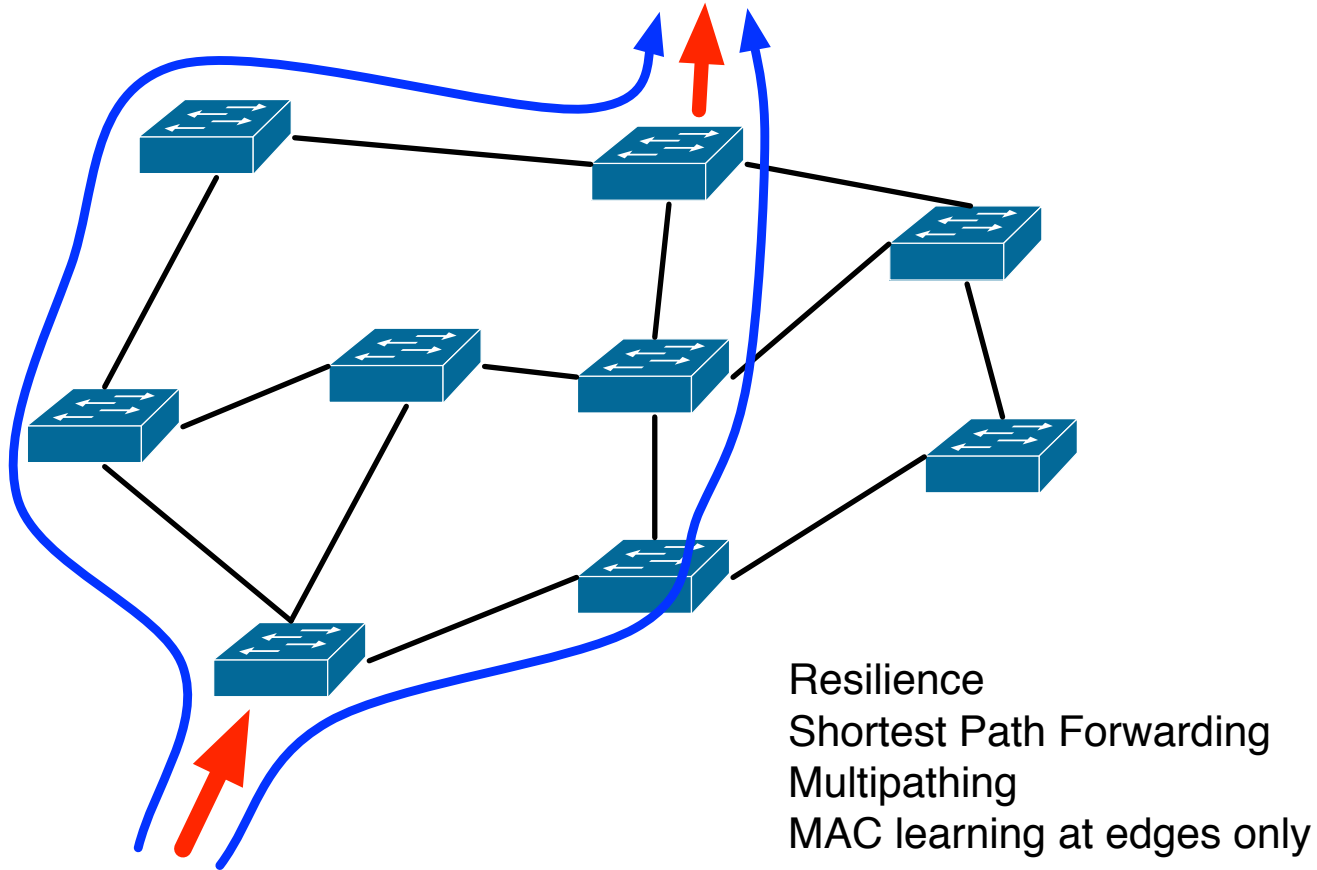
May 4, 2012

Ronald van der Pol

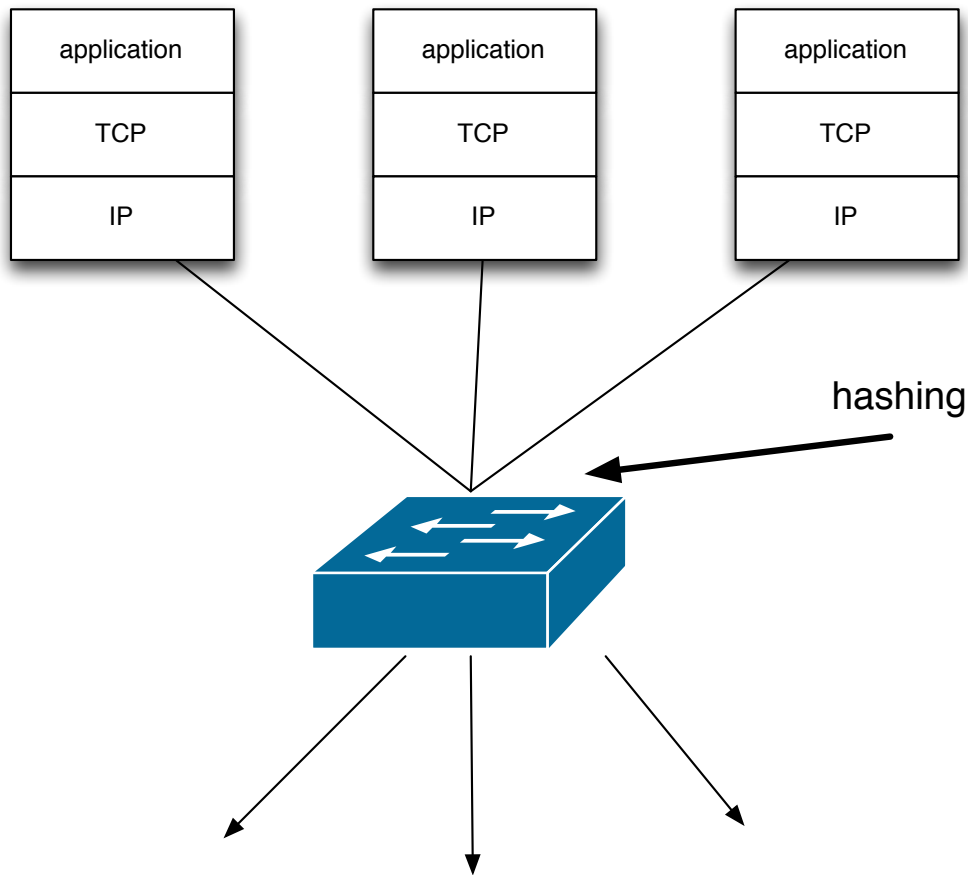
rvdp@sara.nl

- TRILL/SPBM
 - Offer an Ethernet broadcast domain
 - Shortest path forwarding
 - Resilience (IS-IS based re-route)
 - Multipath support
 - Normal Ethernet framing at ingress and egress
 - MAC learning at the edges only
- TRILL
 - Ratified IETF standard
 - 4096 virtual networks
 - No OAM defined yet
- SPBM
 - Ratified IEEE standard
 - 16M virtual networks
 - IEEE 802.1ag OAM support in hardware

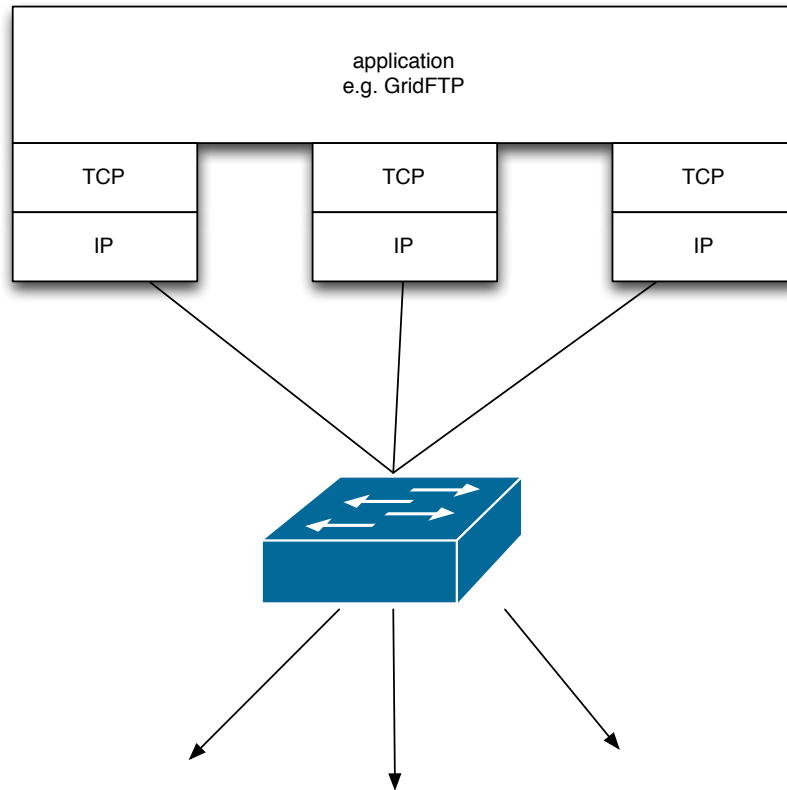
TRILL/SPB is Ethernet Domain with:



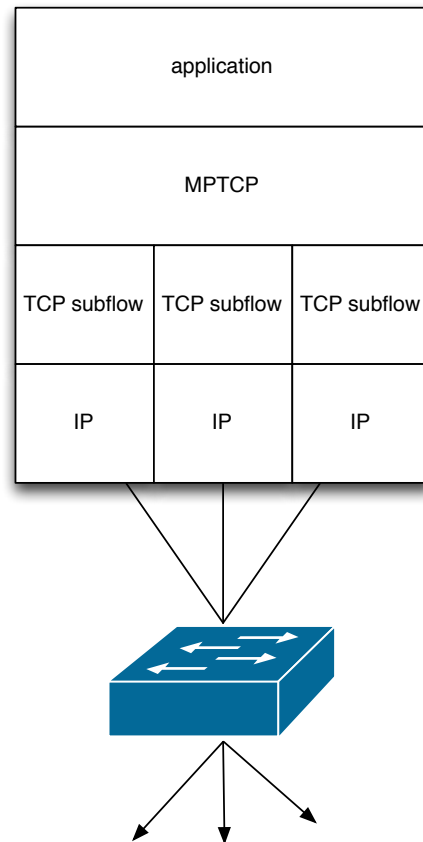
Applications & Multipath (1/3)



Applications & Multipath (2/3)



Applications & Multipath (3/3)



Next Steps

- Assumption: not all LHCONE is going to use the same technology (be it VRF, L2 domain, IDC, NSI, ProtoGeni, Orca, TRILL, SPB, OpenFlow, etc., etc.)
- Currently we have L2 domains, p2p links and VRFs
- Question: how can we add TRILL/SPB/OpenFlow to the LHCONE ecosystem?

TRILL/SPB in LHCONE Options

- Replace p2p link(s) with TRILL/SPB and get
 - + resilience
 - + multipathing
- Replace L2 domain with TRILL/SPB and get
 - + no spanning tree
 - + shortest path forwarding
 - + multipathing
- TRILL/SPB features can be emulated with OpenFlow
- Proposal: take small steps and open mind approach regarding control planes and network abstractions (NSI community, GENI community, OpenStack/Quantum community, ...)
- Work with these communities on overall E2E design

Proposal

- Start OpenFlow based tests to experiment with TRILL/SPB features
 - Automatic failover after link failure
 - Shortest path forwarding
 - Multipath support
- Participants:
 - SURFnet/SARA, USLHCNet, CERN, Internet2 (MANLAN), NORDUnet? Others?