

Directory Assisted TRILL Encapsulation by non-TRILL nodes (Directory Reliant Smart End Node)

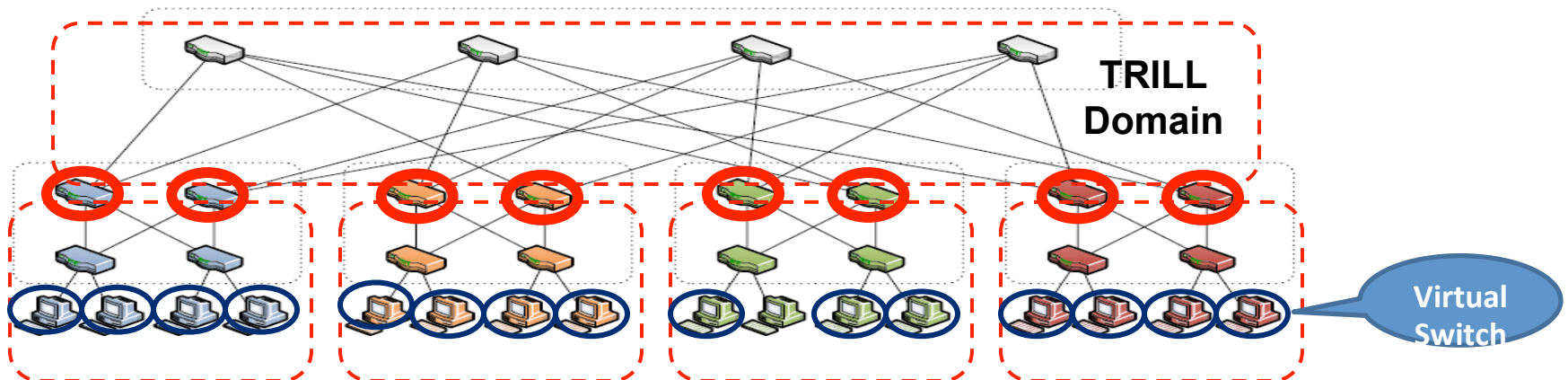
Linda Dunbar
Donald Eastlake
Radia Perlman
Igor Gashinsky

History

- 2011: stripped from [“draft-dunbar-trill-directory-assisted-edge”](#)
- March 2013:
 - revised to reflect progress made by “draft-ietf-trill-directory-framework” and “draft-dunbar-trill-scheme-for-directory-assist”
- July 2013:
 - Emphasized the benefits of pre-encapsulation
 - Described why/how pre-encapsulation can limit MAC Address table size as VLANs getting more fragmented.
- March 2014:
 - Wording refinement to reflect the changes of RFC7067 and the directory scheme draft

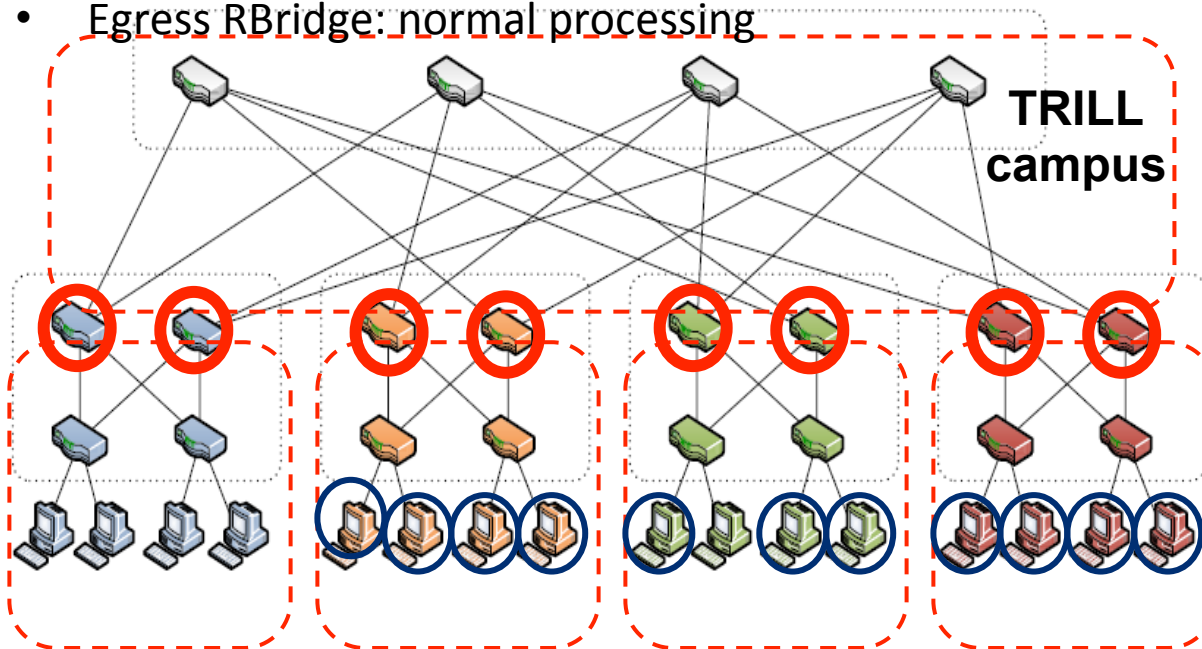
Key Benefits

- **Reduce MAC learning table size for Rbridge Edges and switches on Bridged LANs**
 - Local switches don't need to learn MAC addresses of hosts in remote domains.
- **Better load spreading (Ingress ports) because the VM/hypervisor can send pre-encapsulated data frames to any edge Rbridges (avoid Appointed Forwarder)**
- **Avoid Nickname Exhaustion issue in Data Centers with very large number of VMs and servers.**



Detailed Mechanism

- End node (e.g. Virtual switch on servers) uses Pull Directory to determine if a packet should be sent across TRILL domain to another Rbridge egress node.
 - If yes, pre-encapsulate the frame with TRILL header and send to the local ingress Rbridge.
 - All nodes under RBridge use a common local ingress RBridge's nickname
- Ingress RBridge: forward TRILL encapsulated frames to TRILL campus. Native Ethernet frames stay locally (or pull directory for unknown DA)
- Egress RBridge: normal processing

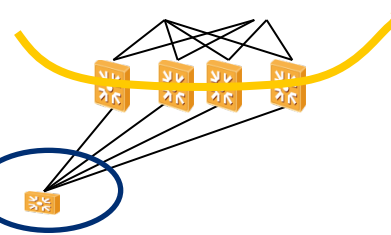


vSwitch gets mapping from Directory Service
DA = Egress RBridge
SA = Ingress RBridge

Local Decision

Choose any of directly attached Edge RBridge as Ingress SA (local decision, same as ECMP)

TRILL Campus



- Directory:
 - End node attached to {R1, R2, R3, R4}

Benefits

- Local switches don't need to keep remote hosts MAC addresses in their FDB.
- Allow all ports to forward TRILL frames (i.e. no need to designate one port as AF port)
- Simplified processing on Ingress RBridge
 - Utilize directory service on virtual switches
- No change to edge RBridge processing

Next Step

- Request for WG adoption