

# Directory Assisted RBridge Edge

draft-dunbar-trill-directory-assisted-edge-04

Update

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# Major changes since

draft-dunbar-trill-directory-assisted-edge-02 (IETF81)

- Separate the non-Rbridge encapsulation to an independent draft:
  - draft-dunbar-trill-directory-assisted-edge-4
    - Directory assistance approach
  - Draft-dunbar-trill-directory-assisted-encap-02
    - Non-Rbridge perform TRILL encapsulation

draft-dunbar-trill-directory-assisted-edge-04

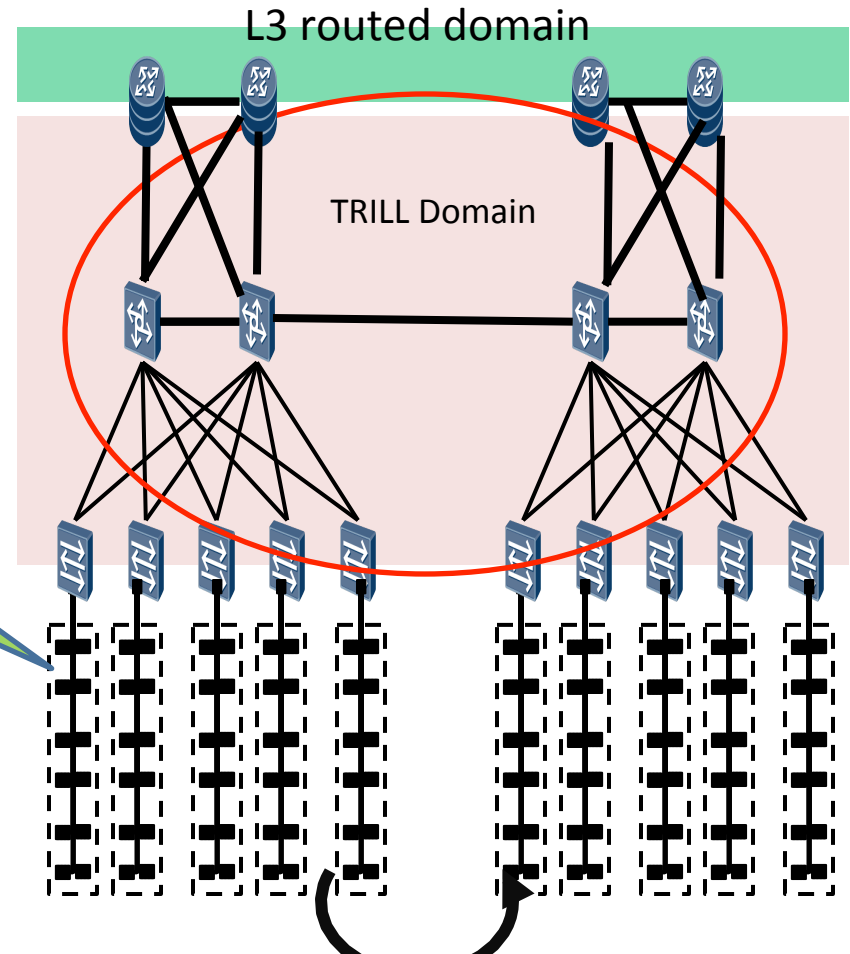
# TRILL in Data Center

**Server can be loaded with applications under any subnets**

**Minimal IP re-config needed**

## Why different?

- Rapid work load shifting
  - Reduce or increase the number of racks when demand changes.
  - Allow servers to be re-loaded with different applications under different subnets without any physical moving or IP re-configuration.



**VMs can be moved to any rack without IP re-configuration on any switches**

# Reasons for using directory in Data Center

- Avoid flooding unknown DA across RBridge domain.
- Avoid designating one port as AF port:
  - directory assisted RBridge edge doesn't need to flood unknown DA data frames across RBridge domain
- Reduce flooding decapsulated Ethernet frames with unknown MAC-DA to a bridged LAN connected to RBridge edge ports.
- Reduce the amount of MAC&VLAN <-> RBridgeEdge mapping maintained by RBridge edge.
  - No need for an RBridge edge to keep the MAC entries for hosts which don't communicate with hosts attached to the RBridge edge.

# Push vs. Pull models

- **Push Model**

Nickname	VID-1	MAC1, MAC2, MAC ...MACn
	VID-2	MAC1, MAC2, MAC ...MACn
	.....	MAC1, MAC2, MAC ...MACn

- Pros: less processing
- Cons: more entries than they really need

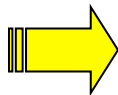
- **Pull Model**

- pulls the MAC&VLAN<->RBridgeEdge mapping entry from the directory server when needed.
  - intercept all ARP/ND requests and frames with unknown DA, and forward them to the Directory Server(s).
- Pros : smaller set because entries age out after awhile
- Cons: more processing

# Pull Model: Reply from Directory

Internet Protocol (IPv4) over Ethernet ARP packet		
bit offset	0 – 7	8 – 15
0	Hardware type (HTYPE)	
16	Protocol type (PTYPE)	
32	Hardware address length (HLEN)	Protocol address length (PLEN)
48	Operation (OPER)	
64	Sender hardware address (SHA) (first 16 bits)	
80	(next 16 bits)	
96	(last 16 bits)	
112	Sender protocol address (SPA) (first 16 bits)	
128	(last 16 bits)	
144	Target hardware address (THA) (first 16 bits)	
160	(next 16 bits)	
176	(last 16 bits)	
192	Target protocol address (TPA) (first 16 bits)	
208	(last 16 bits)	
224	Nickname (first 16 bits)	
240	(next 16 bits) * In case two layer of Nickname is used	
256	(next 16 bits)	

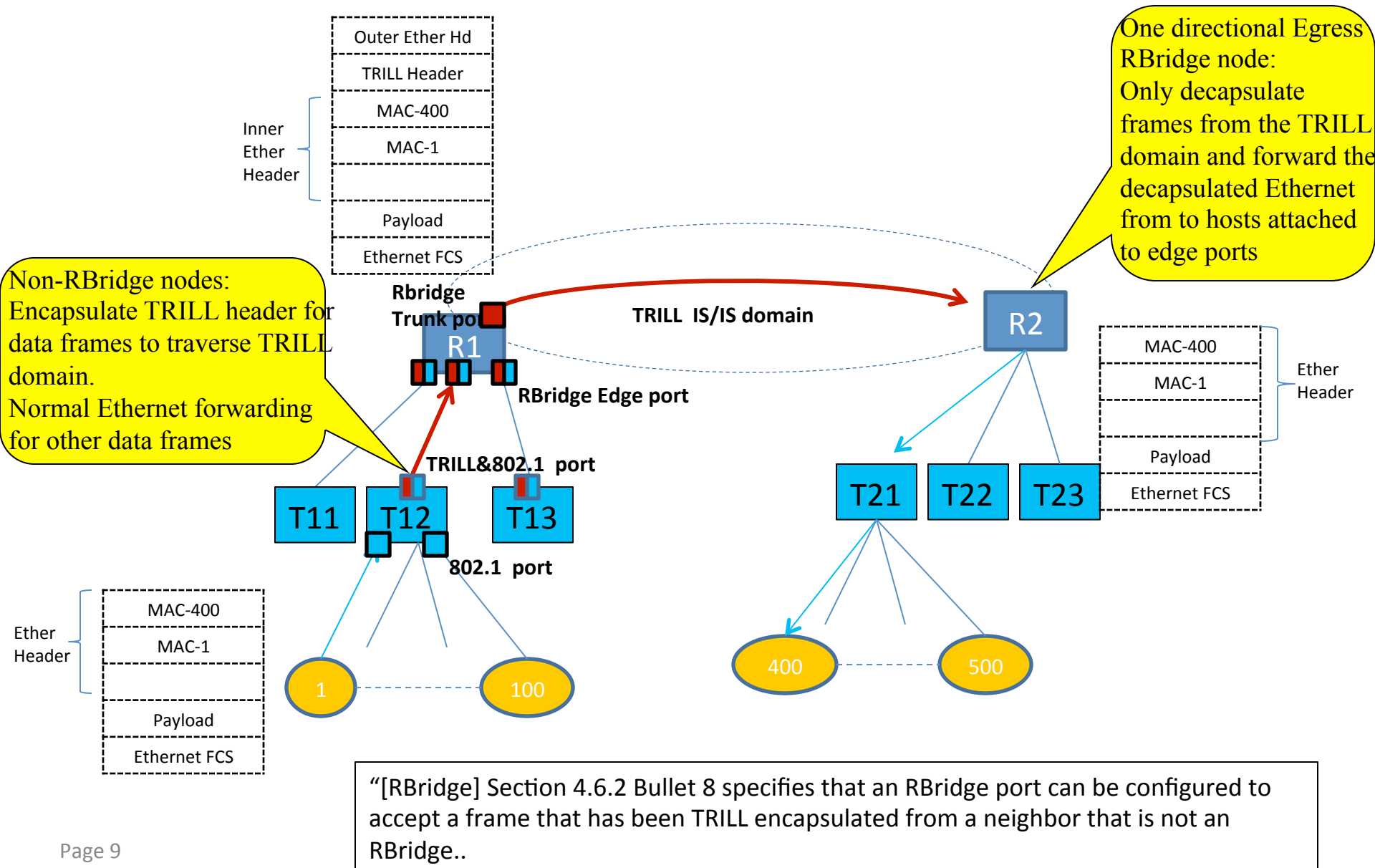
ARP Reply with Nickname



draft-dunbar-trill-directory-assisted-encap-02



# DR Assisted Non-RBridge for TRILL Encapsulation (Simplified RBridge)



# Phantom Nickname

to avoid R1 receiving a data frame with its own Nickname as SA.

Phantom Nickname represents a group of non-RBridge nodes attached to the Rbridge edge node which perform the TRILL encapsulation.

