

# **Bridging on 802.17 LAN and 802.1**

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802.17 Bridging Ad-hoc Group

# Objectives

1. Confirm 802.17 MAC Compliance to 802.1D/Q
  - 802.17 Internal Sublayer Service (ISS and E-ISS) provided to Relay Entity
2. Packet Duplication/Mis-Order Considerations
  - 802.17 MAC will flood packet on LAN/Ring and use TTL to scope the travel of the packet
  - Other flooding proposals being considered
3. 802.17 LAN Encapsulation Techniques
  - Optimizations being considered to improve bandwidth utilization of Ring during Bridging interactions
  - Solution domain outside of the 802.17 MAC (I.e., found in 802.17 MAC Client), but would like guidance to ensure there are no 802.1 architectural conflicts

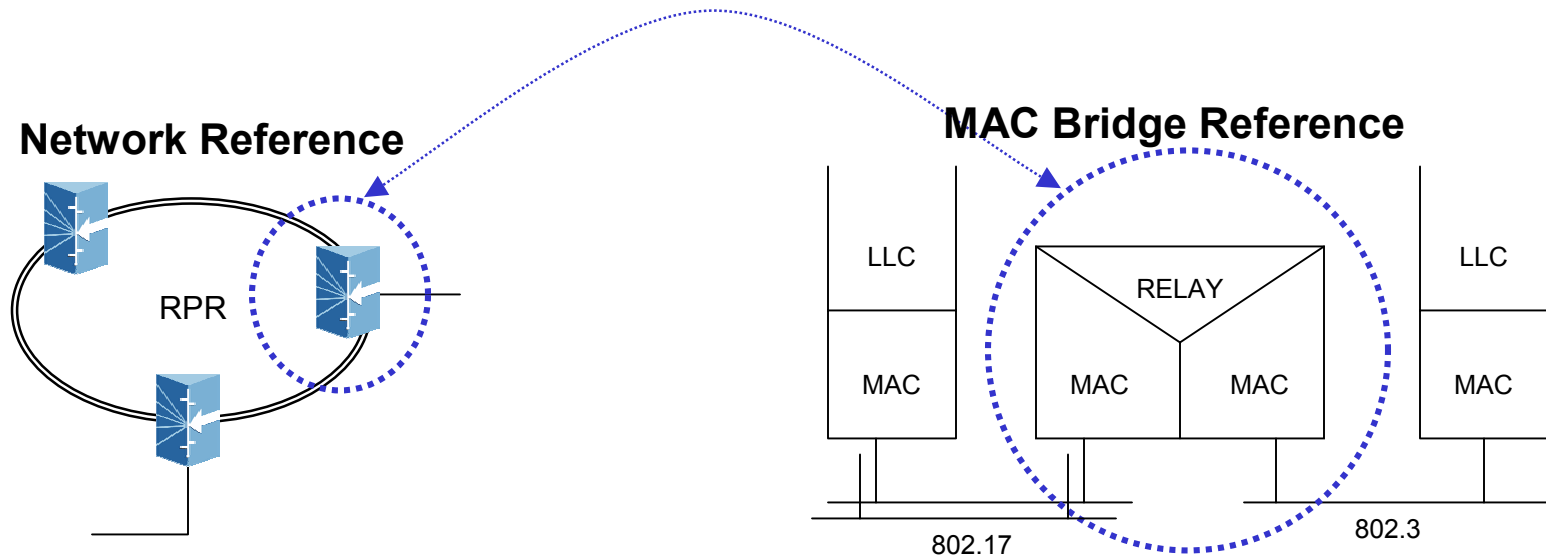
# **802.17 MAC Compatibility With 802.1D/Q**

# Objective

- Satisfy the compatibility requirements as specified in the 5 Criteria for 802.17  
*“The Resilient Packet Ring standard will be compatible with the relevant portions of 802.1D, 802.1Q and 802.1f”*

# 802.17 MAC in a Bridge

- The station on the RPR is a transparent bridge and the ring is the shared medium



# 802.1D/Q Assume a Broadcast Medium

- All 802 MACs operate as broadcast media
- Bridging was designed to operate over broadcast media
- The MAC in an 802 bridge operates in a mode that allows it to process frames not destined to it
  - Referred to as promiscuous mode in the standards
- Bridging operates above the MAC
  - Need not be aware of protection happening at the MAC layer

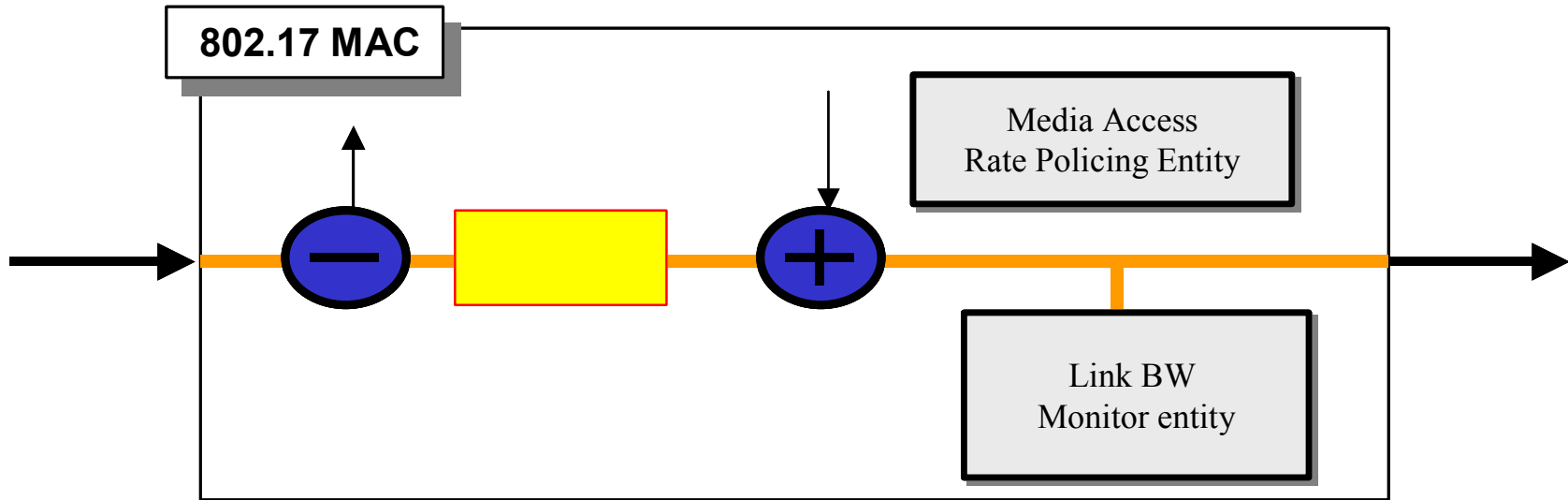


# MAC Requirements for Compatibility With 802.1D/Q



- MAC must support a promiscuous mode so that it allows the Relay Entity to process packets not destined to it
- Must handle frames with all types of addresses
  - Unknown unicast, multicast, broadcast
- Must be able to communicate with the Bridge Protocol Entity via the LLC sublayer
- Must be able support the Internal Sublayer Service (ISS) and the Extended ISS (E-ISS) defined in 802.1D and 802.1Q respectively

# Operation of an 802.17 MAC in a 802.1D/Q Bridge

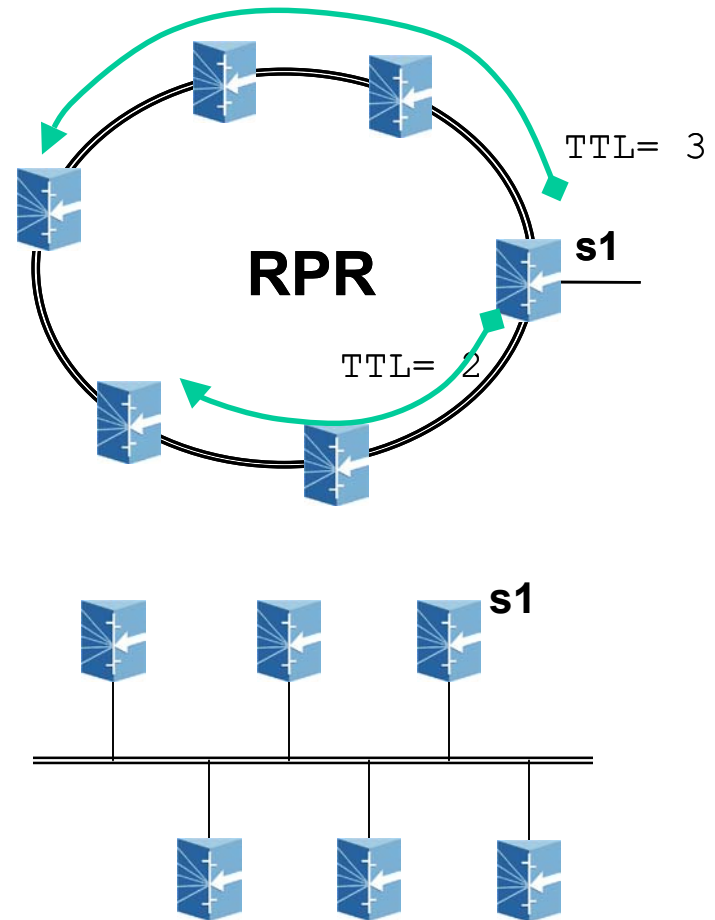


- The MAC must operate in promiscuous mode
- All frames are “Replicated”
  - The frame is “Dropped”, and
  - The frame is forwarded downstream if the TTL permits

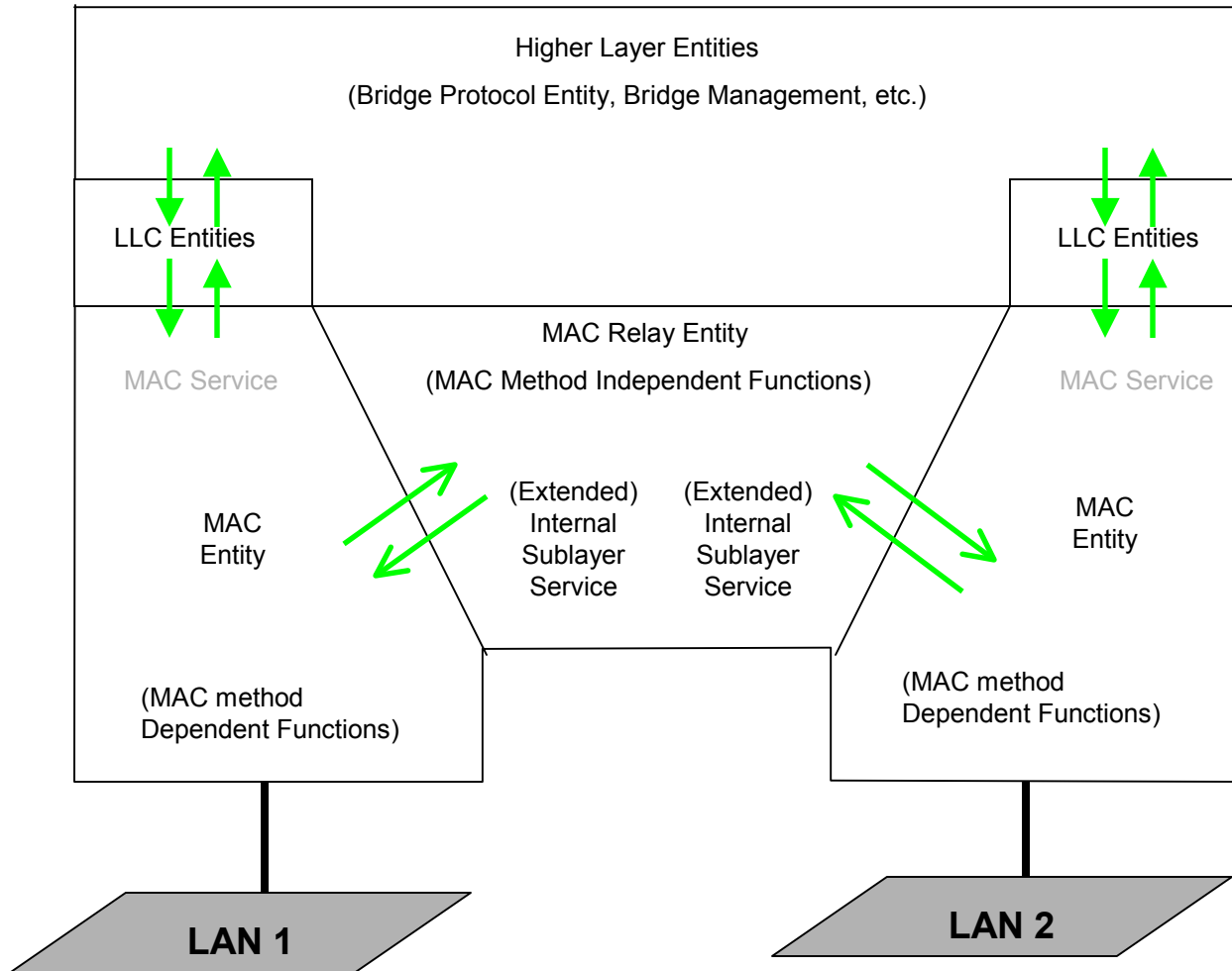


# Transmission of Frames by a Bridge on an 802.17 MAC

- All packets are broadcast on the ring
- Source address stripping cannot be used since the frame may have originated from off the ring
- TTL is used to limit the scope of the packet
- Packet duplication is prevented by TTL scoping travel of packet



# Supporting ISS and E-ISS

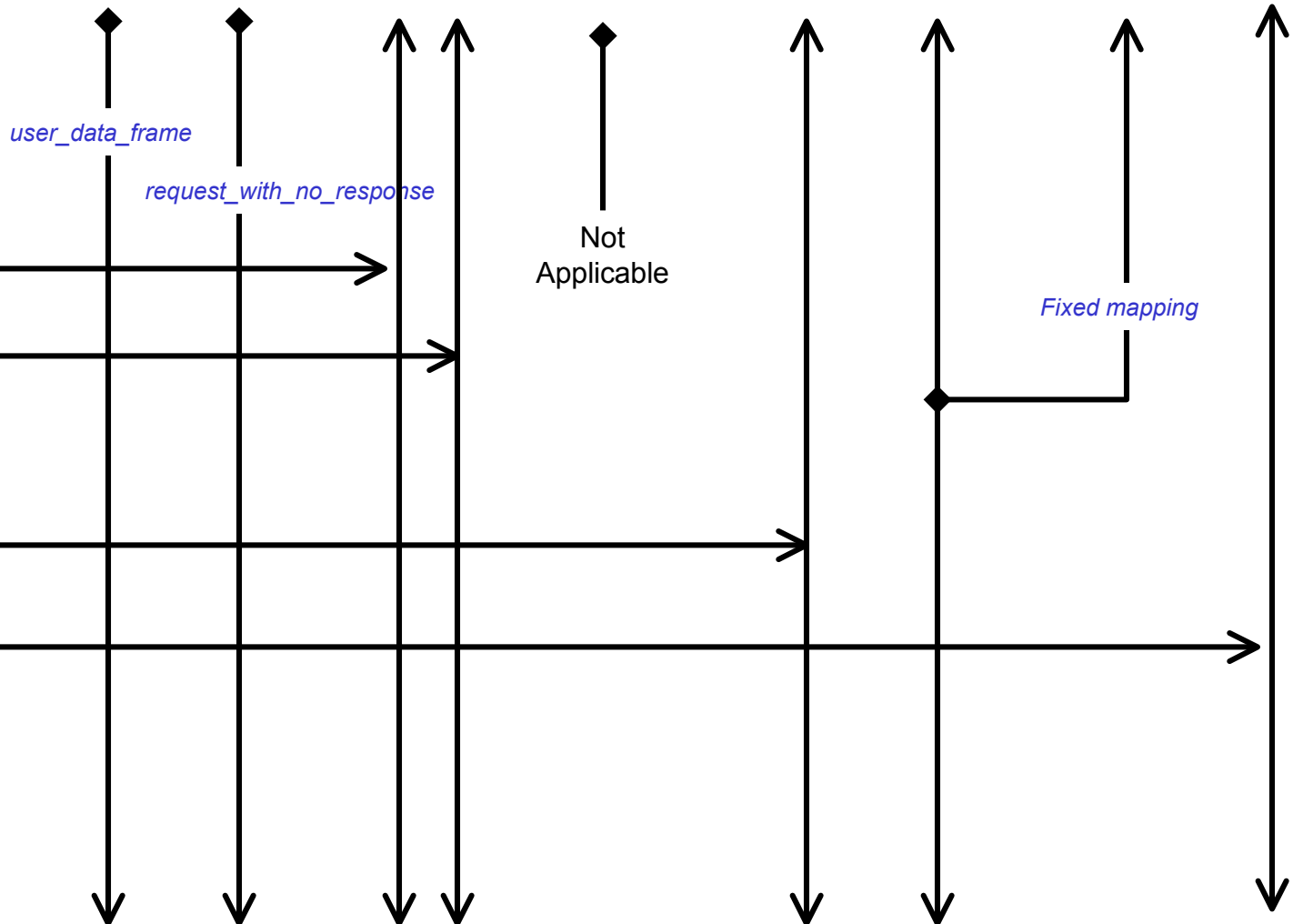


# ISS Service Mappings for 802.17 MAC

MA-UNITDATA.request( frame\_type, mac\_action, DA, SA, Routing Information, MSDU, user\_priority, access\_priority, FCS)

## 802.17 Frame Fields

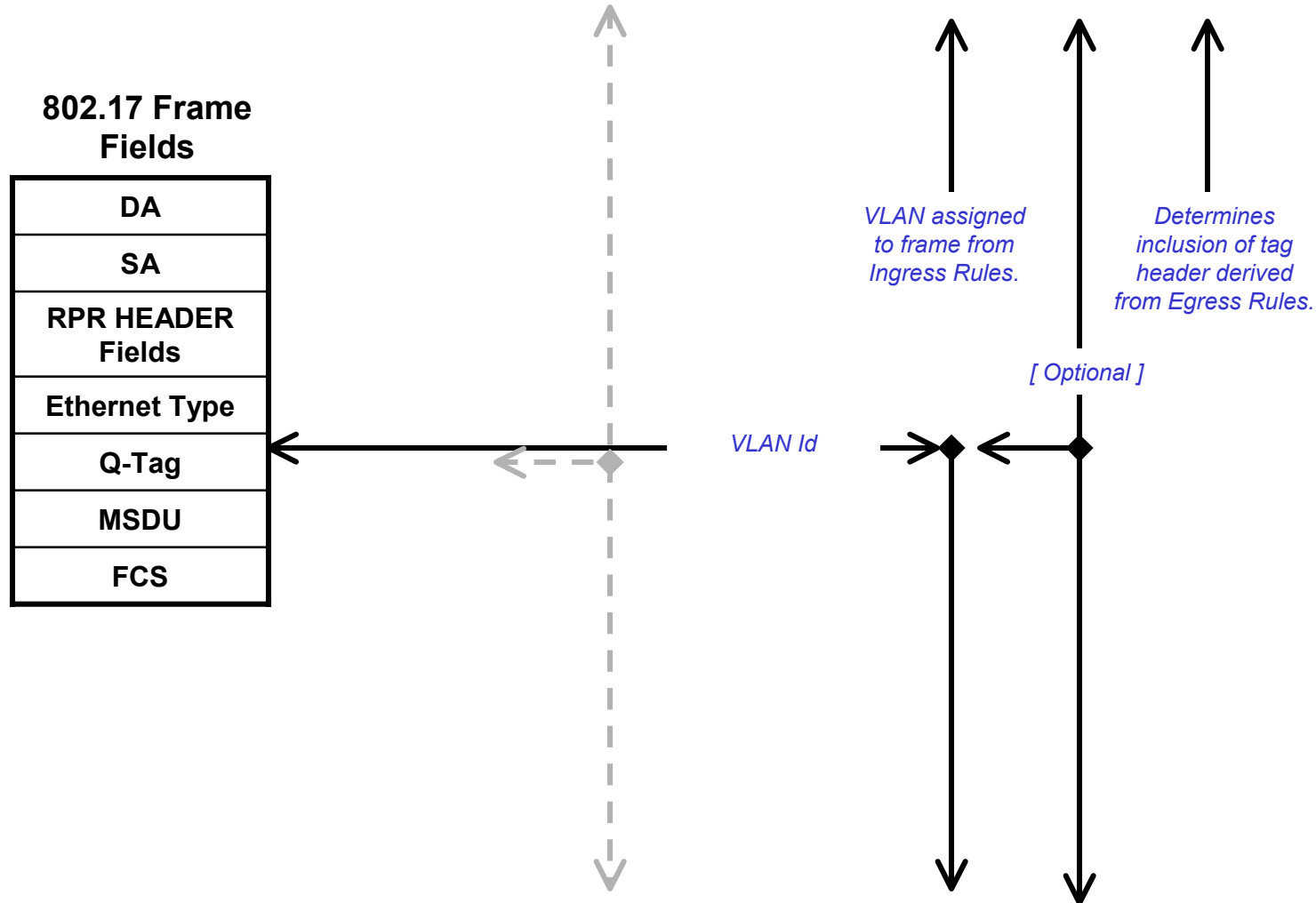
DA
SA
RPR HEADER Fields
MSDU
FCS



MA-UNITDATA.indication( frame\_type, mac\_action, DA, SA, Routing Information, MSDU, user\_priority, \_\_\_\_\_ FCS)

# E-ISS Service Mappings for 802.17 MAC

EM-UNITDATA.request( MA-UNITDATA.request.parameters, cfi, vlan\_class, rif\_info, include\_tag )

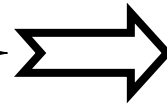
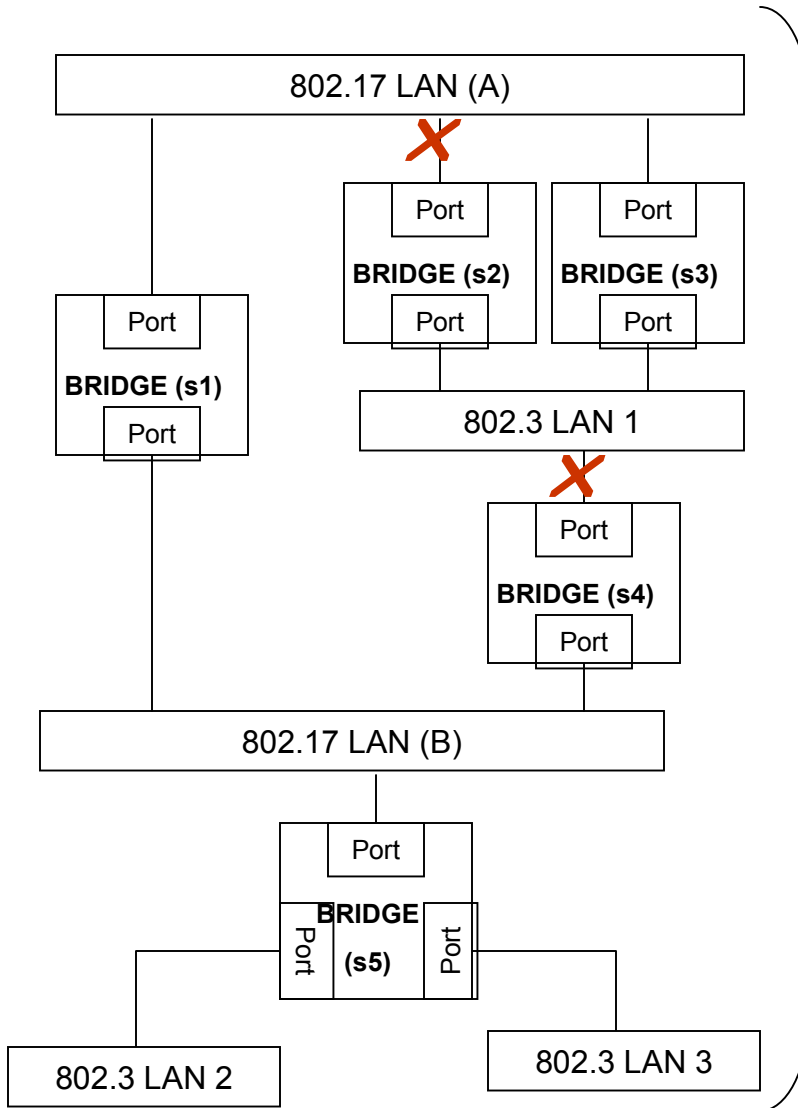


EM-UNITDATA.indication(MA-UNITDATA.indication.parameters, cfi, vlan\_id, rif\_info )

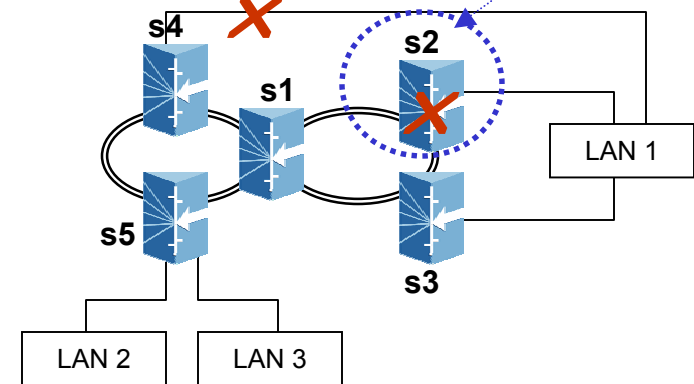
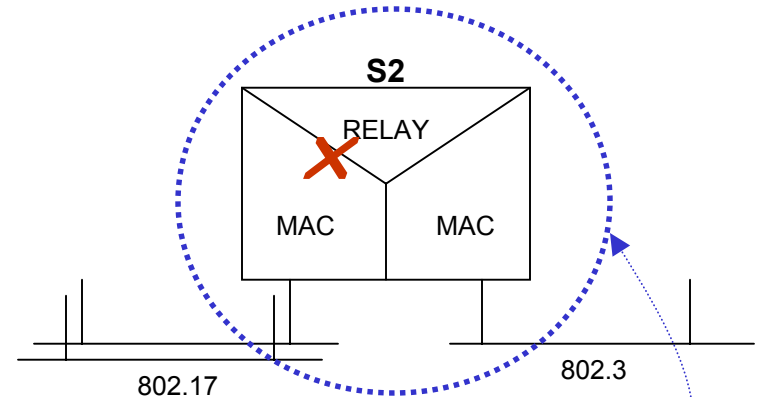
# STP Interactions With 802.17



## Bridged Local Area Network



## Network Reference



**X** Denotes blocking port state due to STP.

# Conclusion

- 802.17 MAC demonstrates compliance to 802.1D and 802.1Q as required by the PAR and 5 Criteria
  - ISS and E-ISS conforms to 802.1D/Q specification
  - Integrity of Spanning Tree Algorithm/protocol is maintained
  - Packet duplication is prevented

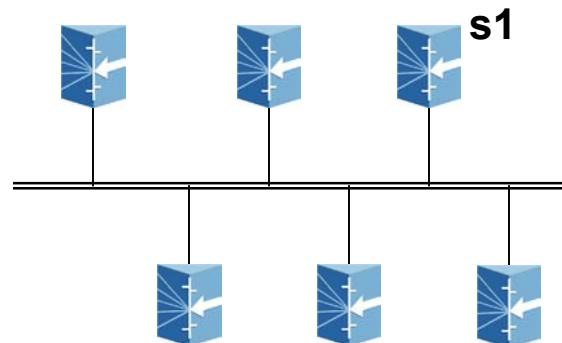
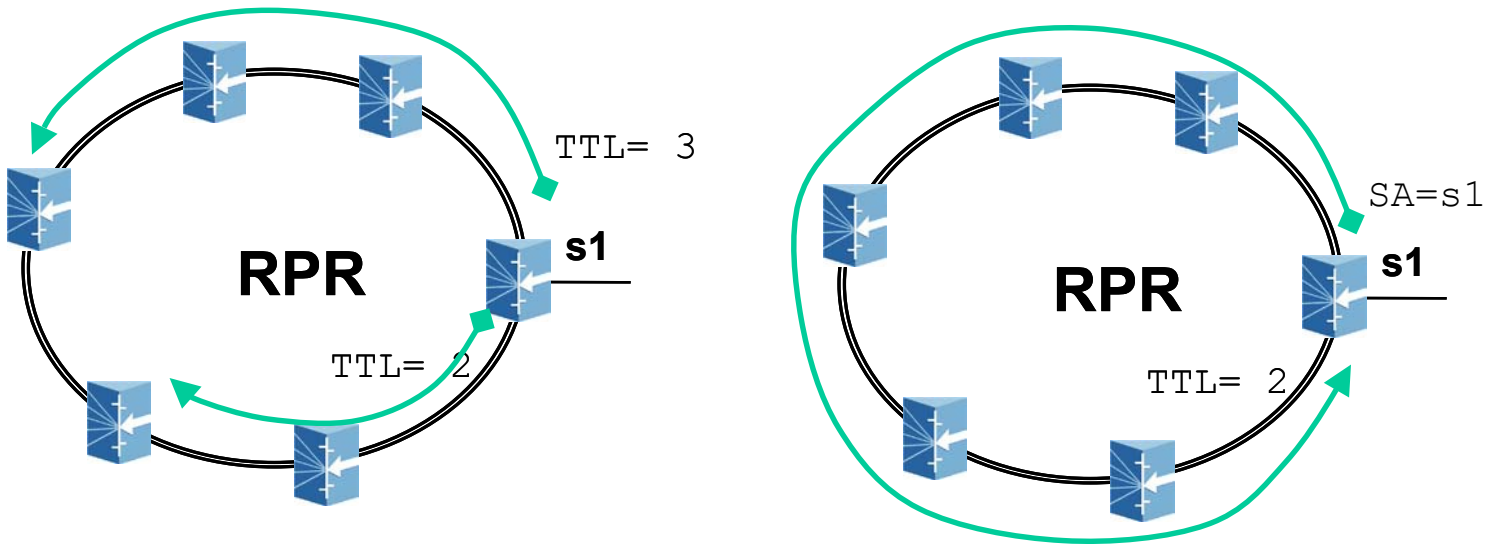
# Questions to 802.1

- Has 802.17 MAC demonstrated compliance to 802.1D/Q?
- Do you see any 802.1 Architectural issues/violations?

# Packet Duplication/Mis-Ordering



# Transmission of Frames by a Bridge on an 802.17 MAC



# **802.17 LAN Encapsulation Techniques**