

# 802.17 MAC Compatibility With 802.1D/Q

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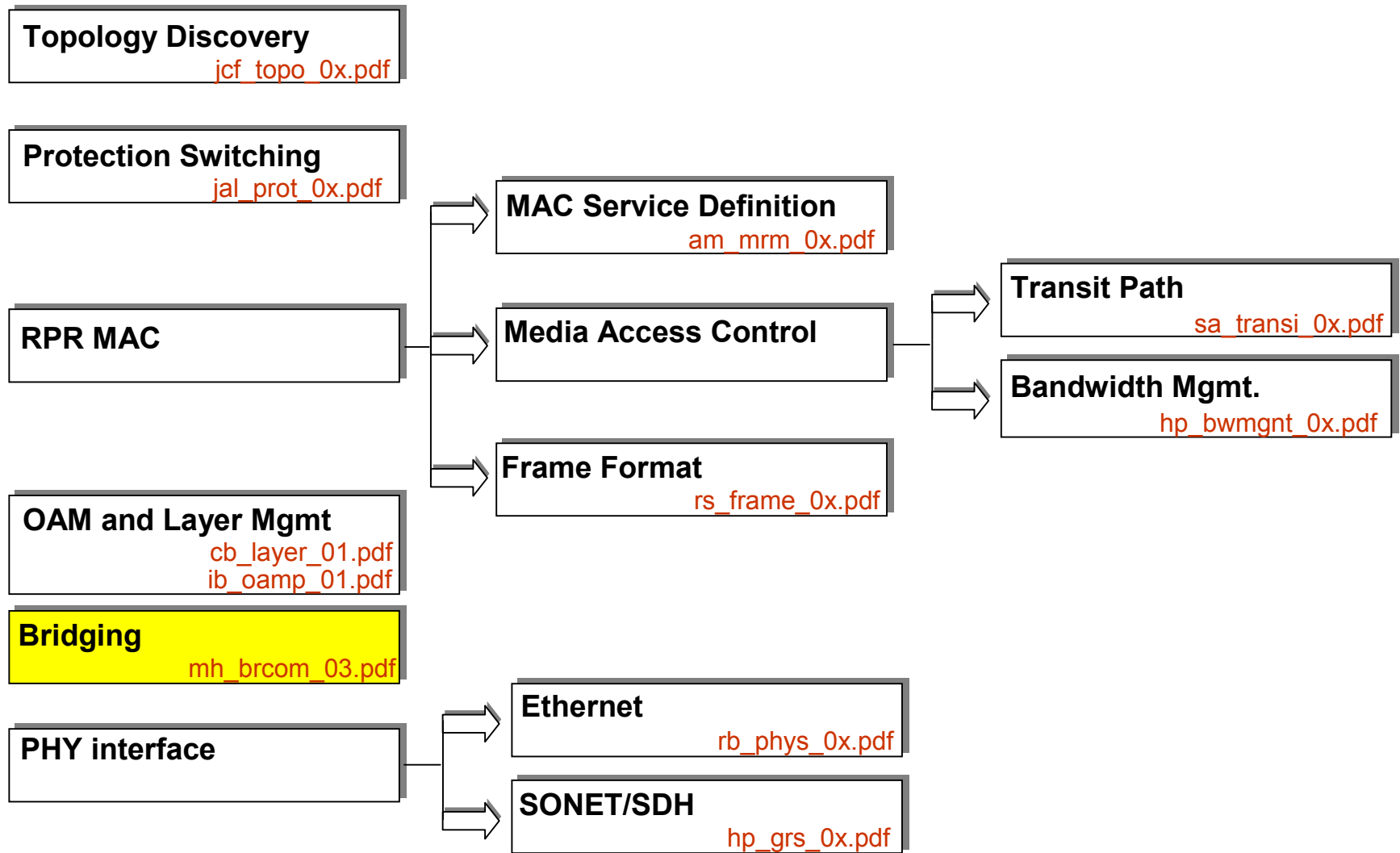
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CP Fu, NEC

# Components of a Complete RPR Proposal



# Objective

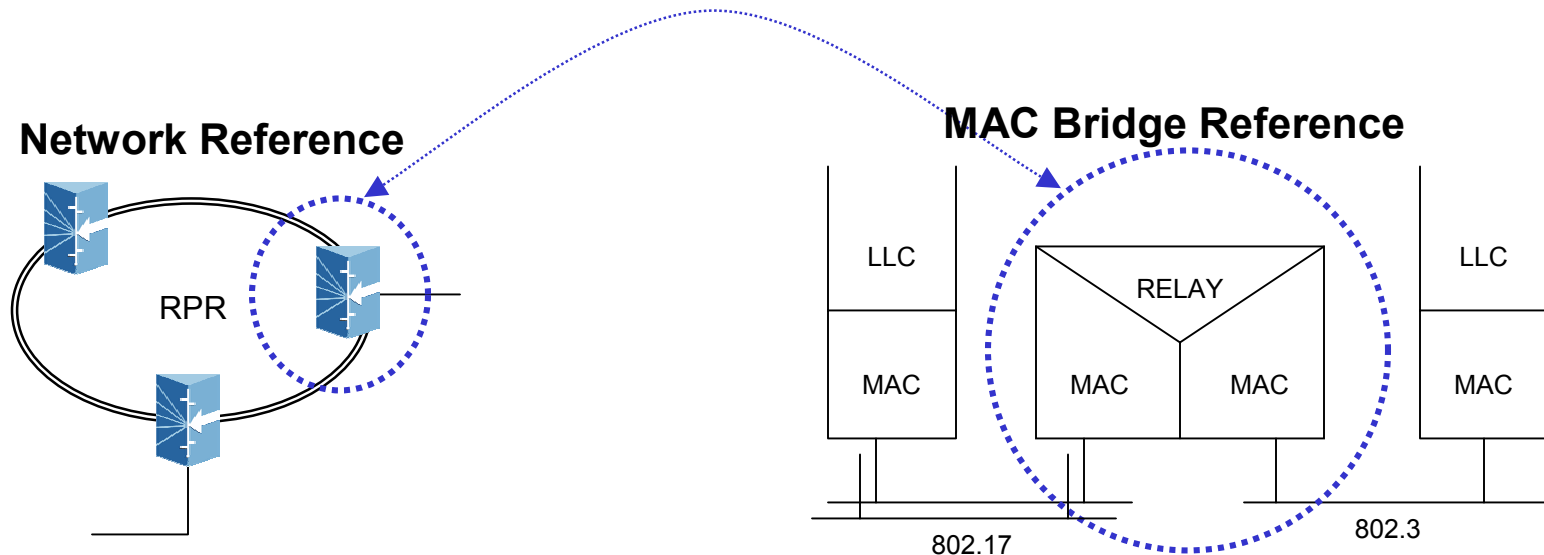
- Satisfy the compatibility requirements as specified in the 5 Criteria for 802.17
  - “The Resilient Packet Ring standard will be compatible with the relevant portions of 802.1D, 802.1Q and 802.1f”*
- This proposal only demonstrates this compatibility
  - Not intended to mandate an implementation of bridging for developers of 802.17

# Outline

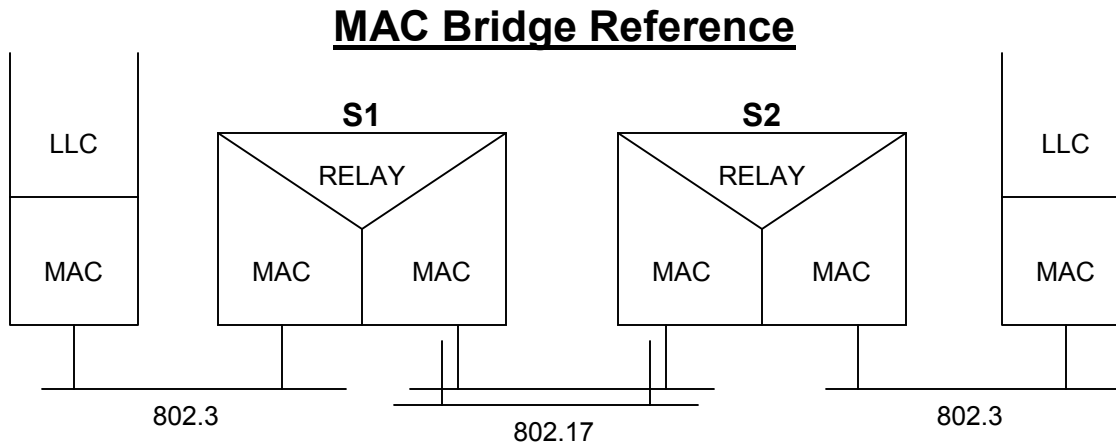
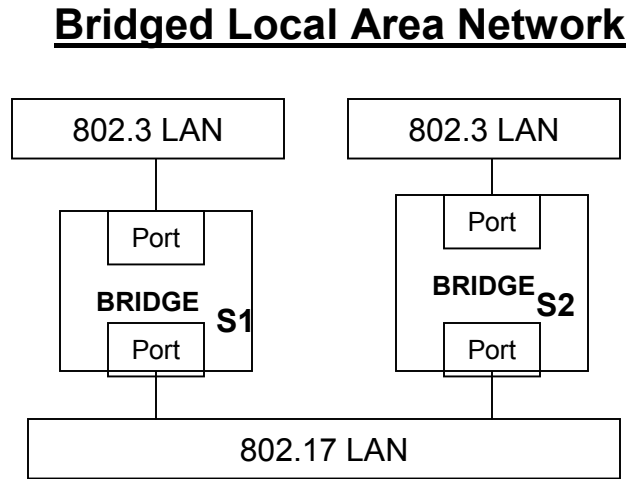
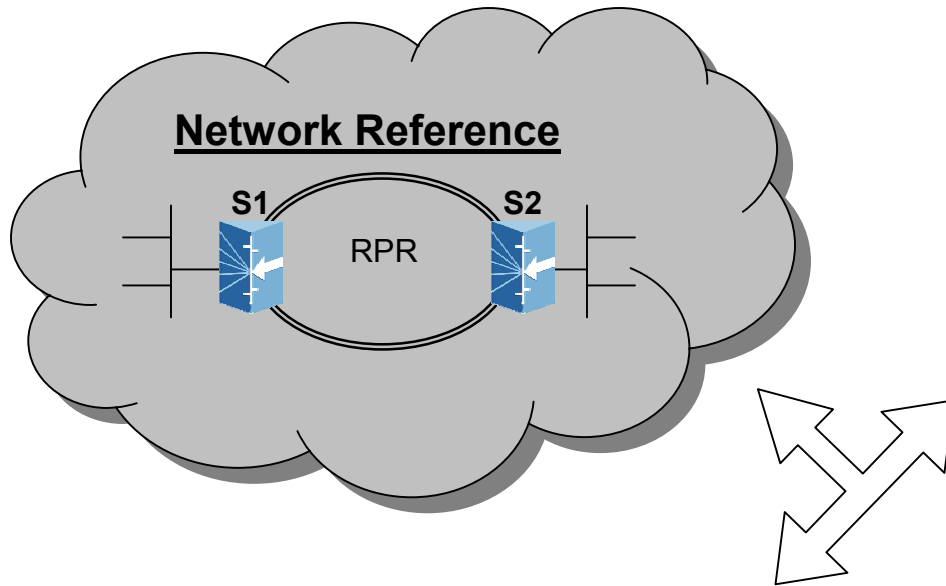
- 802.17 bridge reference models
- MAC requirements for compatibility with 802.1D/Q
- Operation of an 802.17 MAC within a bridge
- Transmission of bridged frames on an 802.17 MAC
- Support for ISS and E-ISS by the 802.17 MAC
- Supporting Spanning Tree Protocol
- Conclusions

# 802.17 MAC in a Bridge

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



# 802.17 Bridging Reference



# 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
- As long as a MAC can be operated as a broadcast medium, STP, GVRP will function properly

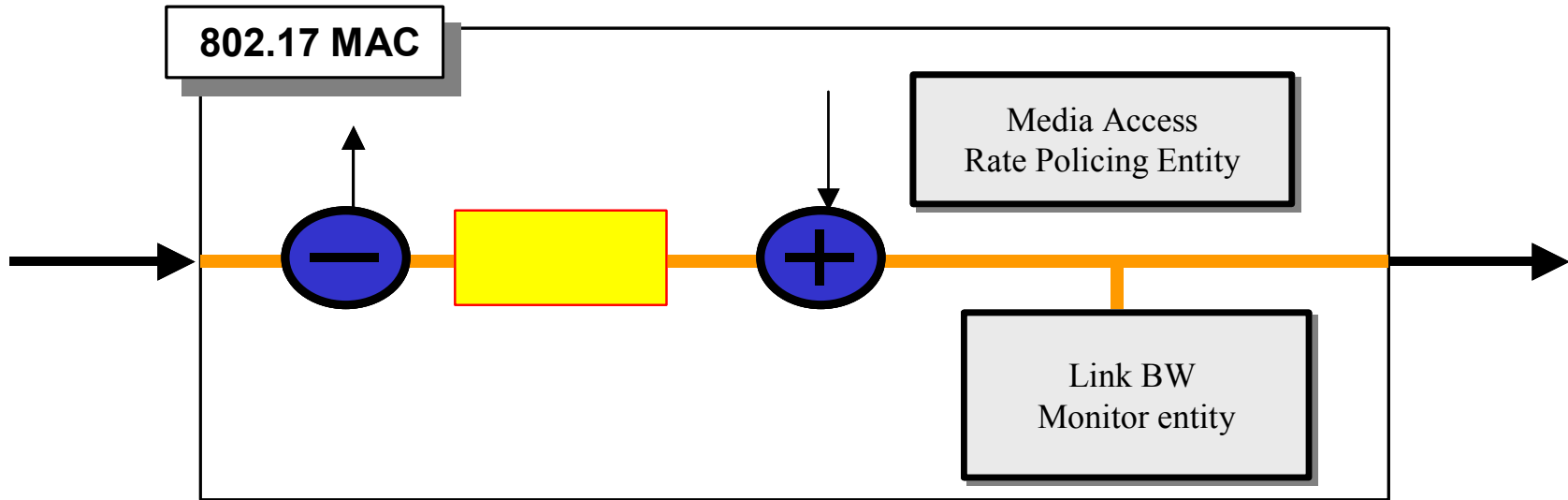
# MAC Requirements for Compatibility With 802.1D/Q



- 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



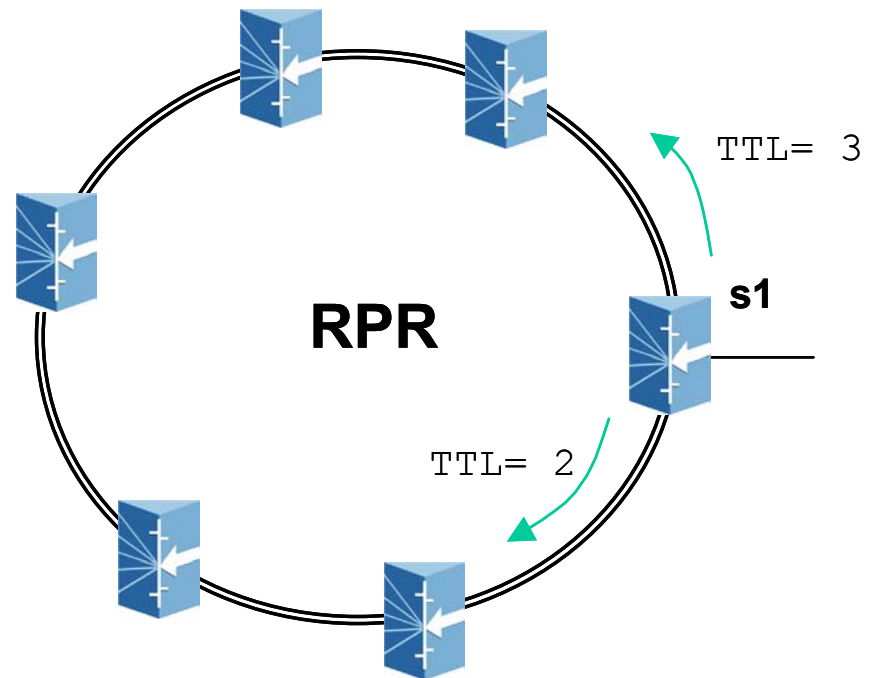
# Operation of an 802.17 MAC in a 802.1D/Q Bridge



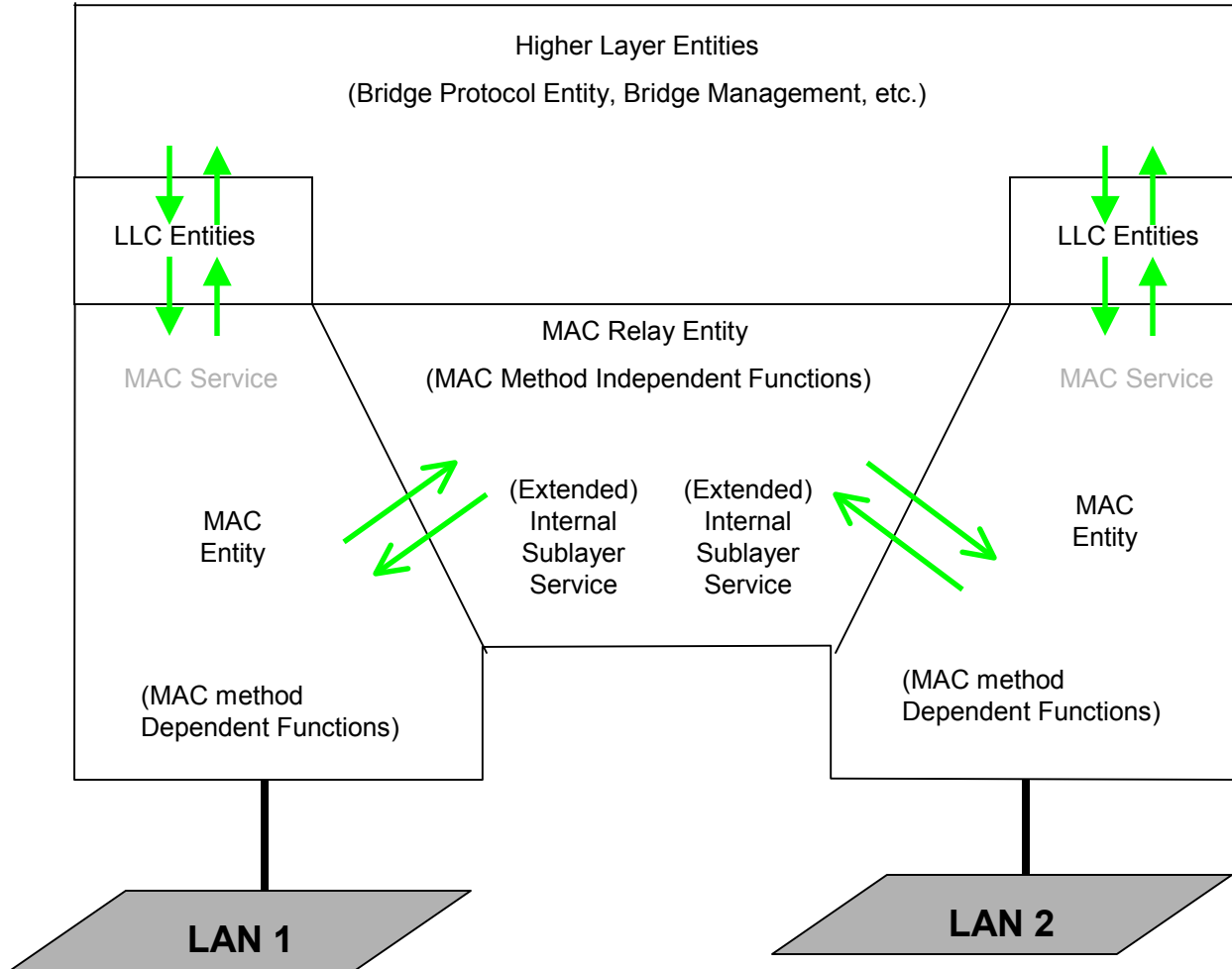
- The MAC must operate in promiscuous mode
- All frames are “Replicated”
  - The frame is “Dropped”, and
  - The frame is forwarded downstream if the TTL permits

# 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



# Supporting ISS and E-ISS



# Parameters for ISS and E-ISS Service Primitives

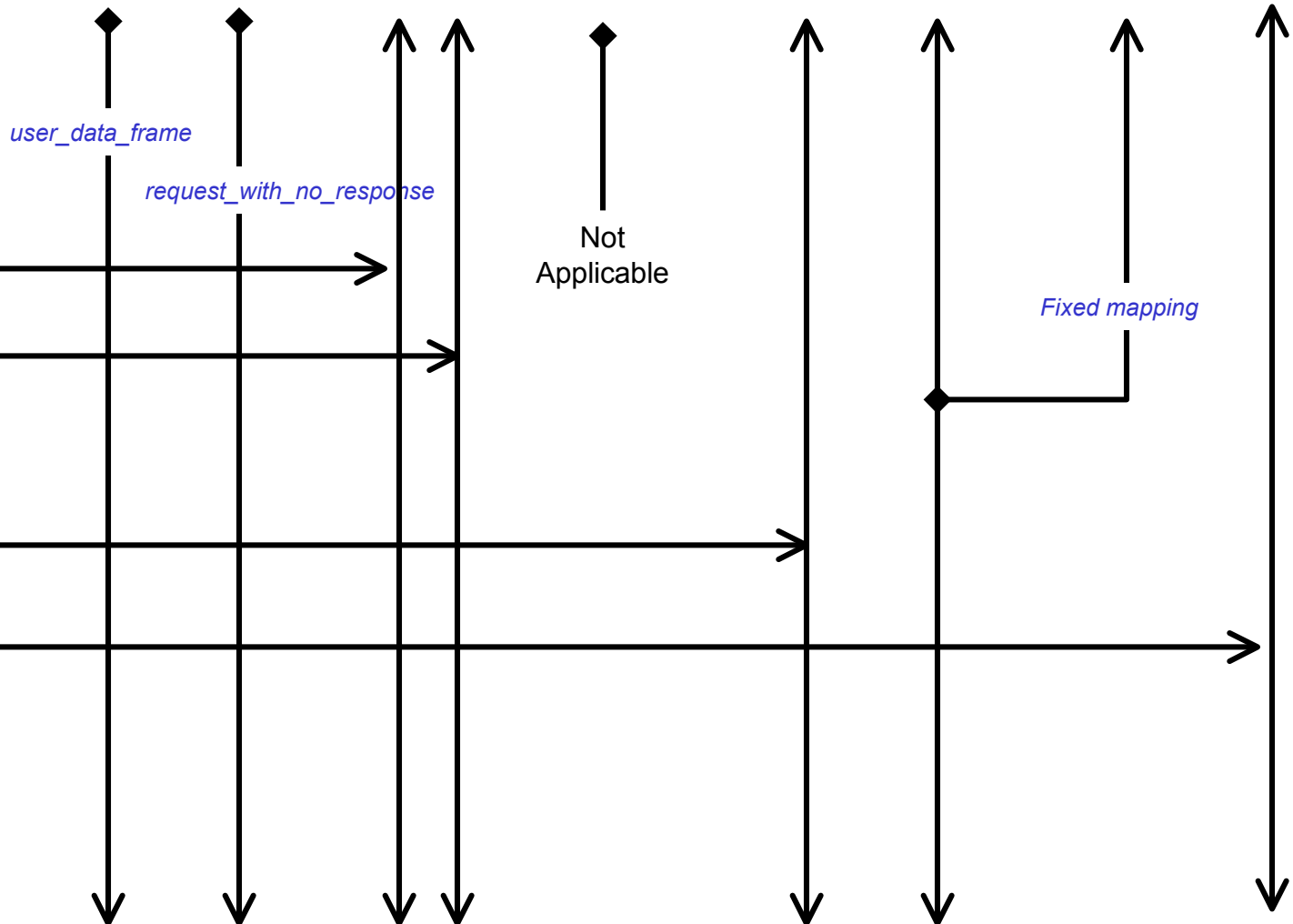
Service Primitive	Transparent Bridge (802.1D)		VLAN Bridge (802.1Q)	Source Route Bridge	SRT (Source Route Transparent)	Remote Bridge
Indication	<ul style="list-style-type: none"> <li>• Frame_Type</li> <li>• Mac_Action</li> <li>• DA</li> <li>• SA</li> <li>• RI</li> <li>• MSDU</li> <li>• User_Priority</li> <li>• FCS</li> </ul>	+	<ul style="list-style-type: none"> <li>• CFI</li> <li>• VLAN_Id</li> <li>• RIF_Info</li> </ul>			<ul style="list-style-type: none"> <li>• Cluster_Id</li> </ul>
Request	<ul style="list-style-type: none"> <li>• Frame_Type</li> <li>• Mac_Action</li> <li>• DA</li> <li>• SA</li> <li>• RI</li> <li>• MSDU</li> <li>• User-Priority</li> <li>• Access_Priority</li> <li>• FCS</li> </ul>	+	<ul style="list-style-type: none"> <li>• CFI</li> <li>• VLAN_Class</li> <li>• RIF_Info</li> <li>• Include_Tag</li> </ul>			<ul style="list-style-type: none"> <li>• Cluster_Id</li> </ul>

# 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

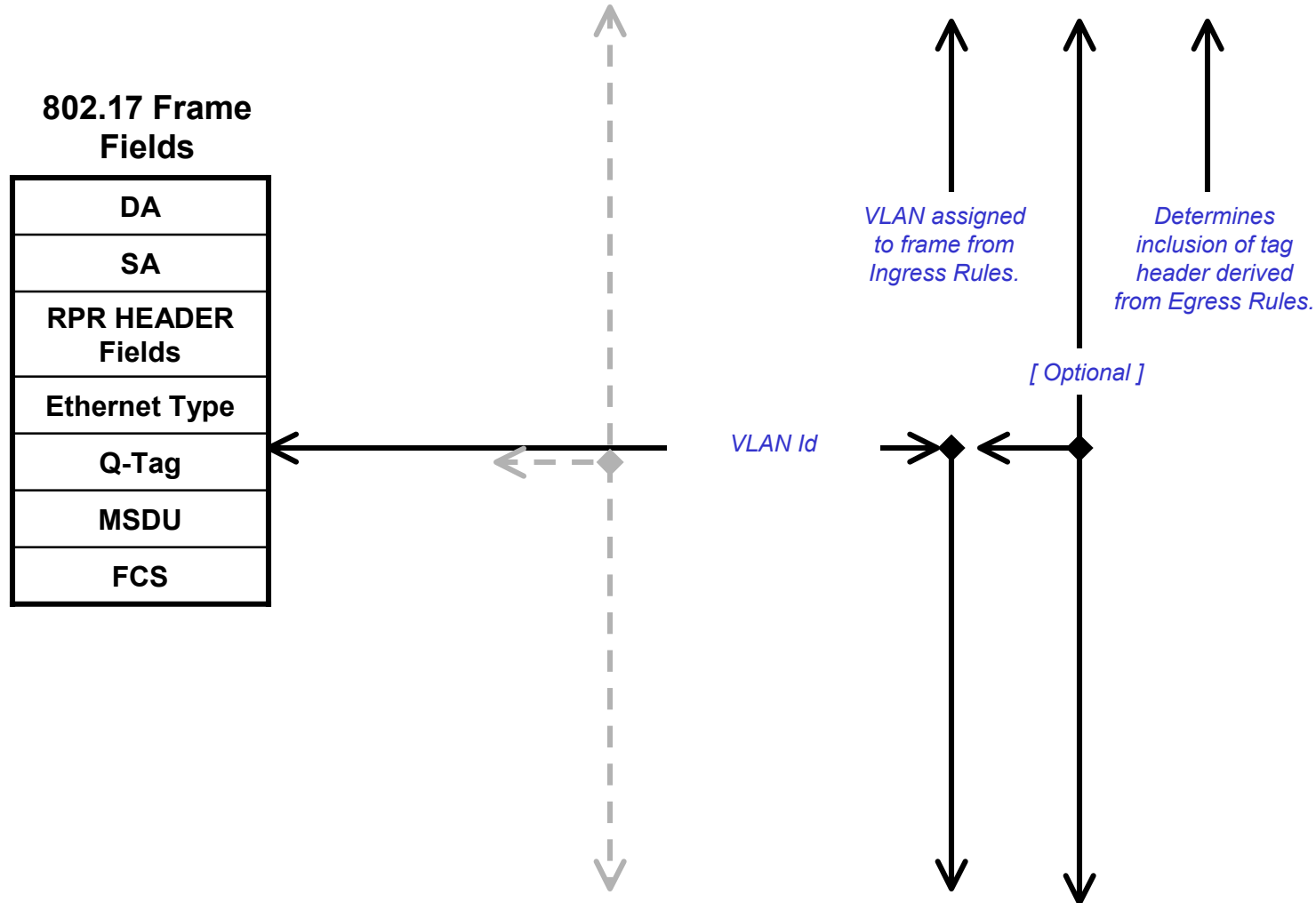
DA
SA
RPR HEADER Fields
MSDU
FCS



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 )

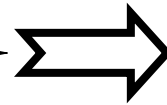
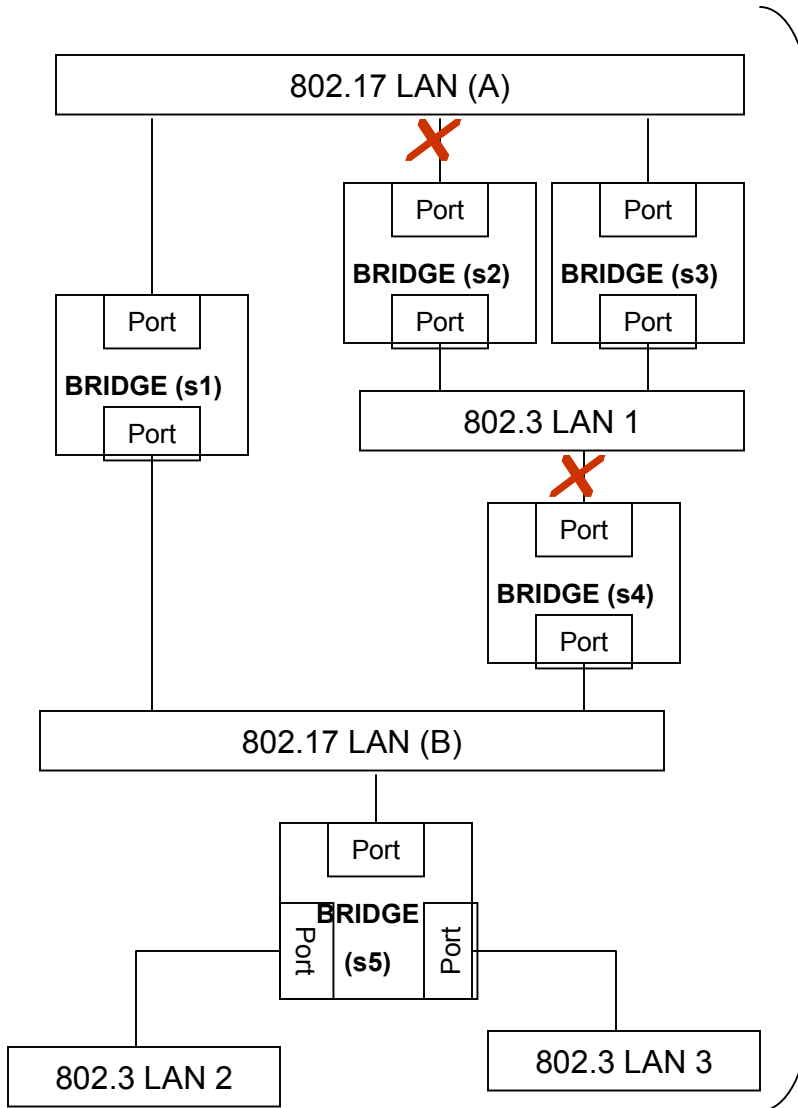


EM-UNITDATA.indication(MA-UNITDATA.indication.parameters, cfi, vlan\_id, rif\_info )

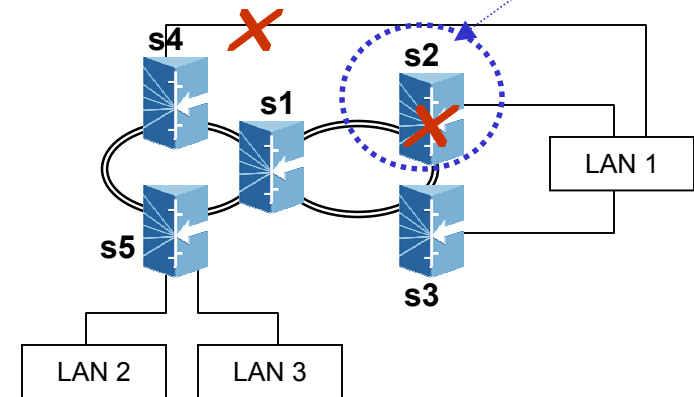
# STP Interactions With 802.17



## Bridged Local Area Network



## Network Reference



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

# Conclusions

## This Proposal:

Demonstrates 802.17 MAC compatibility with 802.1D and 802.1Q as required by the PAR and 5 Criteria.

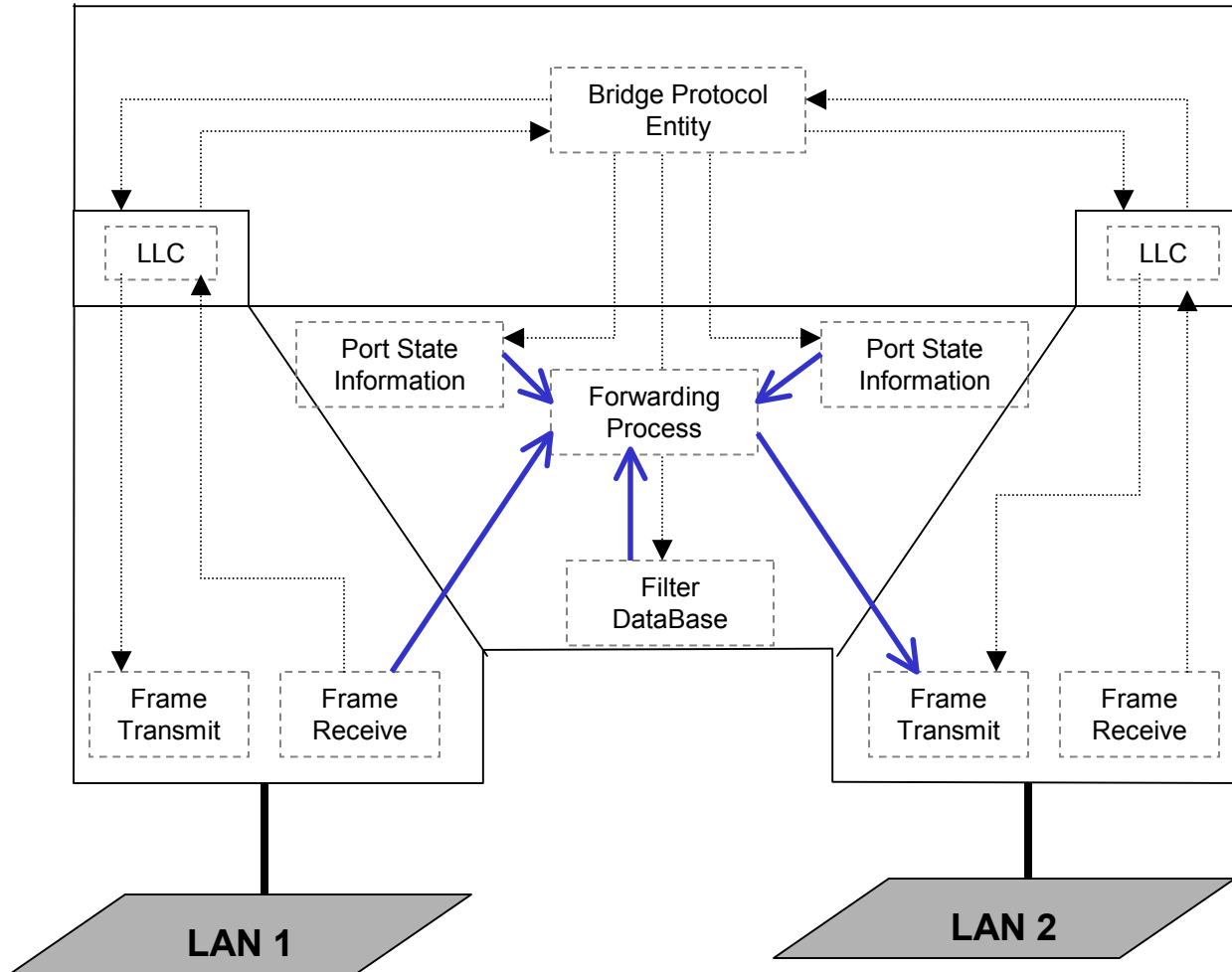
## Other Proposals:

There is no other proposal that demonstrates 802.17 compatibility with 802.1D and 802.1Q.



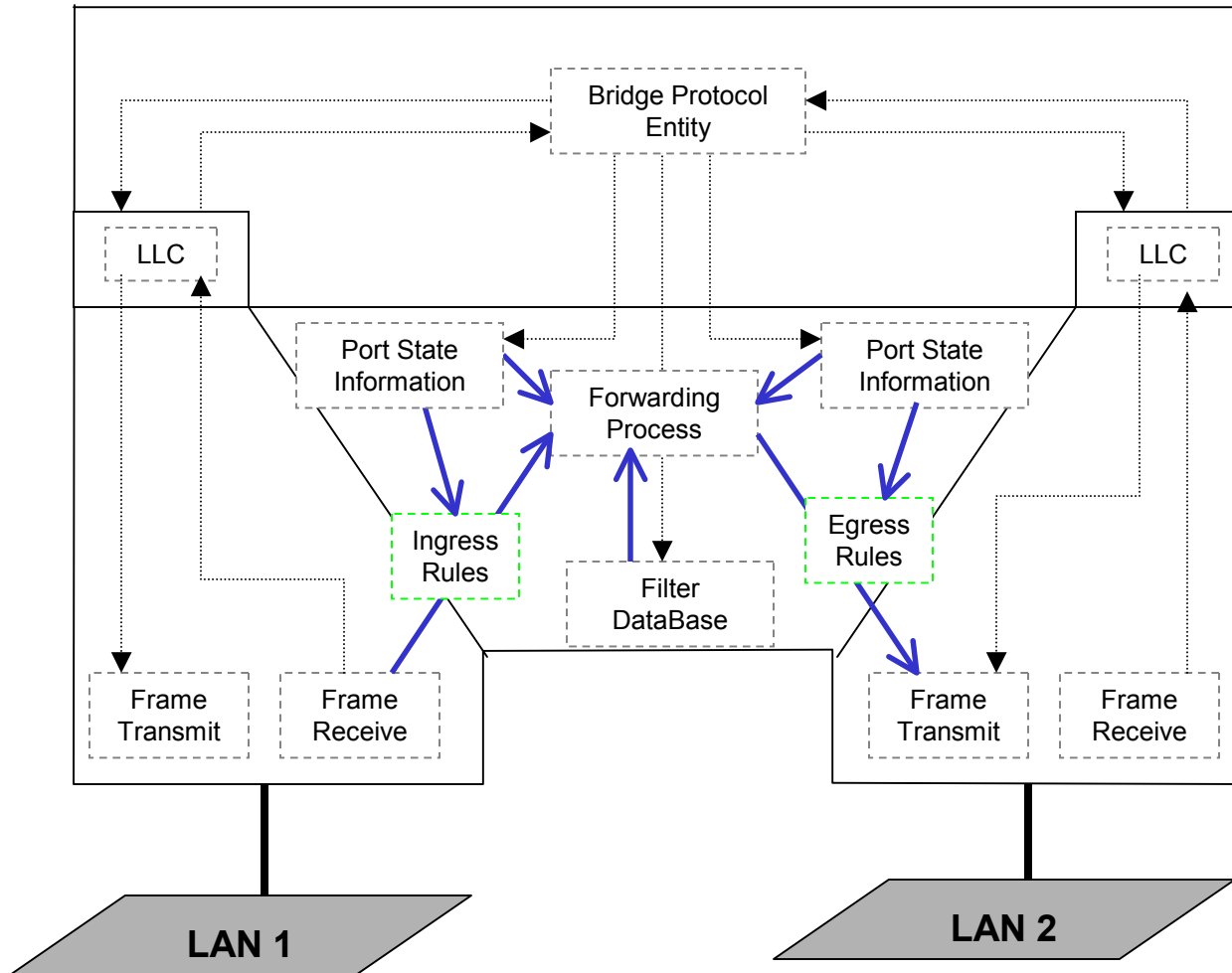
# Back-up Charts

# 802.1D Reference



- • Denotes Relaying MAC frames
- .....▶ • Denotes reception and transmission of BPDUs

# 802.1Q Reference



- • Denotes Relaying MAC frames
- .....▶ • Denotes reception and transmission of BPDUs