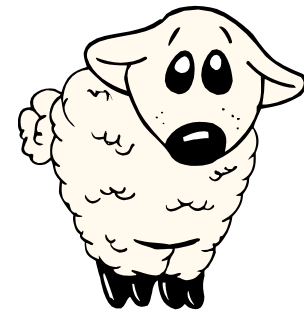




Basic Bridging Compliance Requirements for draft D1.2

Bridging Adhoc





Objective



- Re-present Basic Bridging Compliance Proposal for acceptance by working group for Draft D1.2
- Basic Bridging Proposal presented at May 02 meeting, and re-presented at July 02 meeting
- Decision in July meeting to limit scope of 802 compliance to exclude enhanced bridging to make progress on the standard.
 - Basic Bridging Proposals in May/July meeting identified issues with existing drafts (D0.1, and subsequent) affecting basic bridging compliance, and proposed solutions addressing these issues
 - No decision has been made in July/Sept meetings to address these issues
- Need to address current compliance issues so solutions can become part of the draft and we can begin the editing/review process



Basic Bridging Compliance



- Preserve the 802.1 bridging relay ISS/EISS
- Maintain integrity of 802.1D / 802.1Q bridged networks when bridges are connected to 802.17 rings, and ring is comprised of hosts and bridges.
- Maintain ordering/duplication of 802 network traffic
 - (being addressed in other proposals)



Major bridging compliance issue with current draft



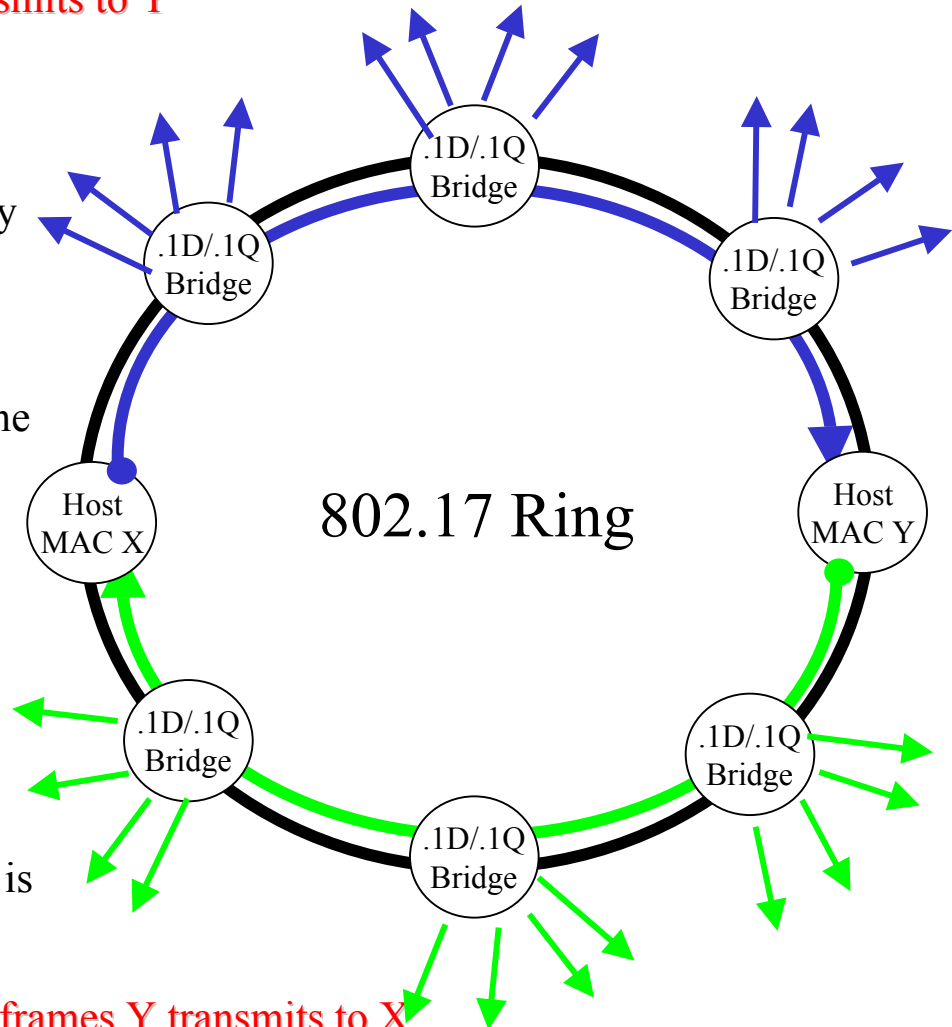
- Persistent Bridge Flooding Issue (Comment Carried from D0.3)
 - Current RPR receive rules specify that local hosts strip traffic from the ring when the frame.DA matches the host's MAC address (destination stripping). Bridges always copy all frames to their bridging relay (promiscuous mode)
 - Comment #31000 - Anytime unicast traffic is destination stripped by one station (local host) and replicated by others (bridges promiscuously copy frames) to their bridging relay, there is an issue with persistent bridged network flooding.
 - Current draft has an 802.1D/Q compliance issue when hosts and promiscuous bridges coexist on the ring, and must be corrected in order to achieve 802.1D/Q compliance requirements and satisfy the 802.17 5-criteria

TBs flood all frames X transmits to Y

Problem: Host X transmits to Host Y and frame is stripped by Host Y. Host Y transmits to Host X and frame is stripped by Host X. Bridges on X-Y path never learn Host Y's MAC address. These bridges continuously flood all Host X to Y frames, to their other network interfaces, breaking the filtering database. Similarly for Y-X path.

Solution: Intermediate bridges should not copy local unicast host traffic to their bridging relay. Intermediate bridges shall only copy flooded traffic. Local unicast traffic is not flooded on the ring or throughout the adjoining bridged LAN networks. Only broadcast/unknown traffic is flooded.

TBs flood all frames Y transmits to X



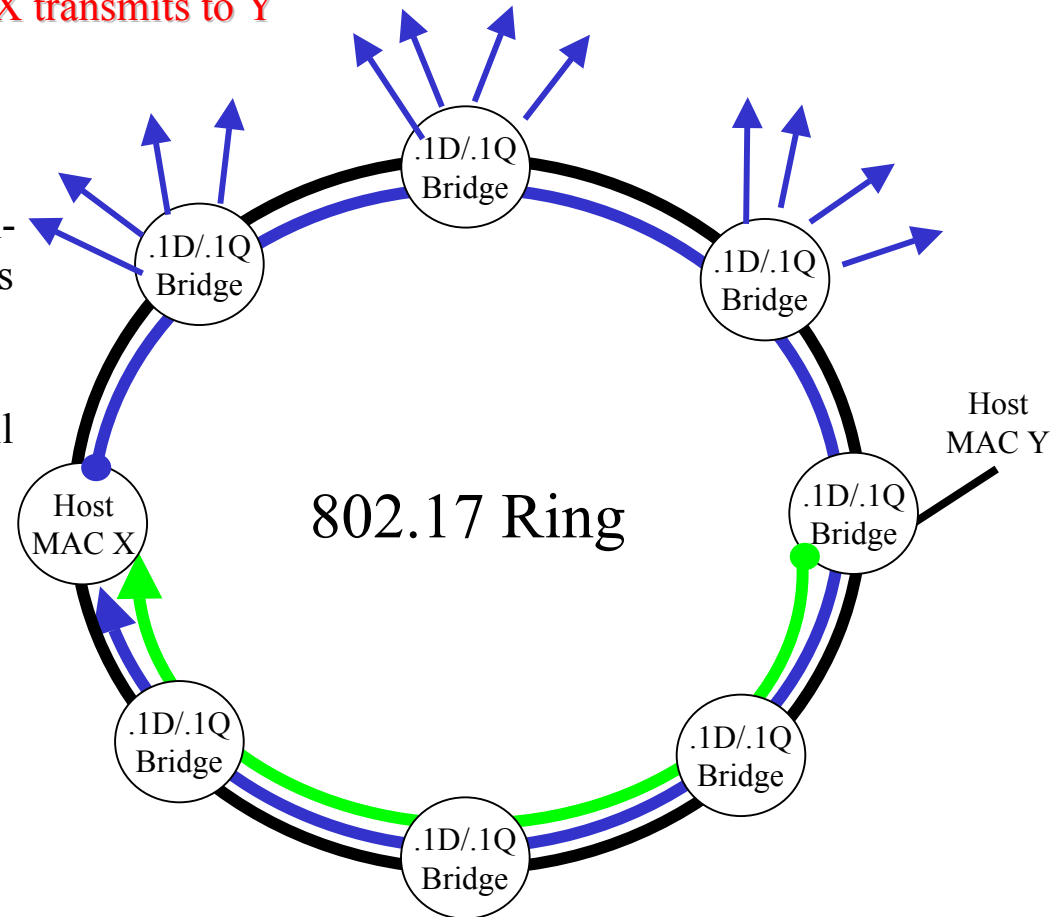
Persistent Flooding /2



TBs flood all frames X transmits to Y

Problem: Host Y transmits to Host X and frame is stripped by Host X. Host X transmits to Host Y and since Host Y is non-local, all bridges flood X-Y frames. Bridges on Y-X path that are beyond X stripping point never able to learn Host Y's MAC address. These bridges continuously flood all Host X to Y frames, to their other network interfaces, breaking the filtering database. Similarly for Y-X path

Solution: Intermediate bridges should not copy local unicast host traffic to their bridging relay. Intermediate bridges shall only copy flooded traffic. Local unicast traffic is not flooded on the ring or throughout the adjoining bridged LAN networks. Only broadcast/unknown traffic is flooded.





BAH Basic Bridging Compliance Recommendation



- Define the use of a Flooding Indicator in RPRcontrol field
 - Flooding indicator defines when frames may be locally stripped (*no_flood*) or must be flooded (*flood*)
 - Allows local 802.17 host traffic to be destination stripped without adversely affecting bridges on the ring.
 - Flooding indicator must be supported on all local unicast, remote unicast, broadcast, multicast frames for the local frame format, and for all specified frame.DA semantics of the extended frame format.
- Support two modes of MAC operation
 - Host mode and Basic bridge mode
 - Define MAC Transmit/Receive Rules for host and basic bridge mode



Revised MAC TX/RX Rules

Transmit Rules



- Transmit Rules (Frames transmitted from Client to MAC)
 - Host MAC Mode
 - If DA is in topology database (destination is local RPR host), the frame is transmitted with a flooding_indicator = no_flood
 - If DA is not in topology database (frame transmitted to non-local host via a bridge), the frame is transmitted with a flooding_indicator = flood
 - Basic bridge MAC mode
 - All data frames are transmitted with flooding_indicator = flood



Revised MAC TX/RX Rules

Receive Rules



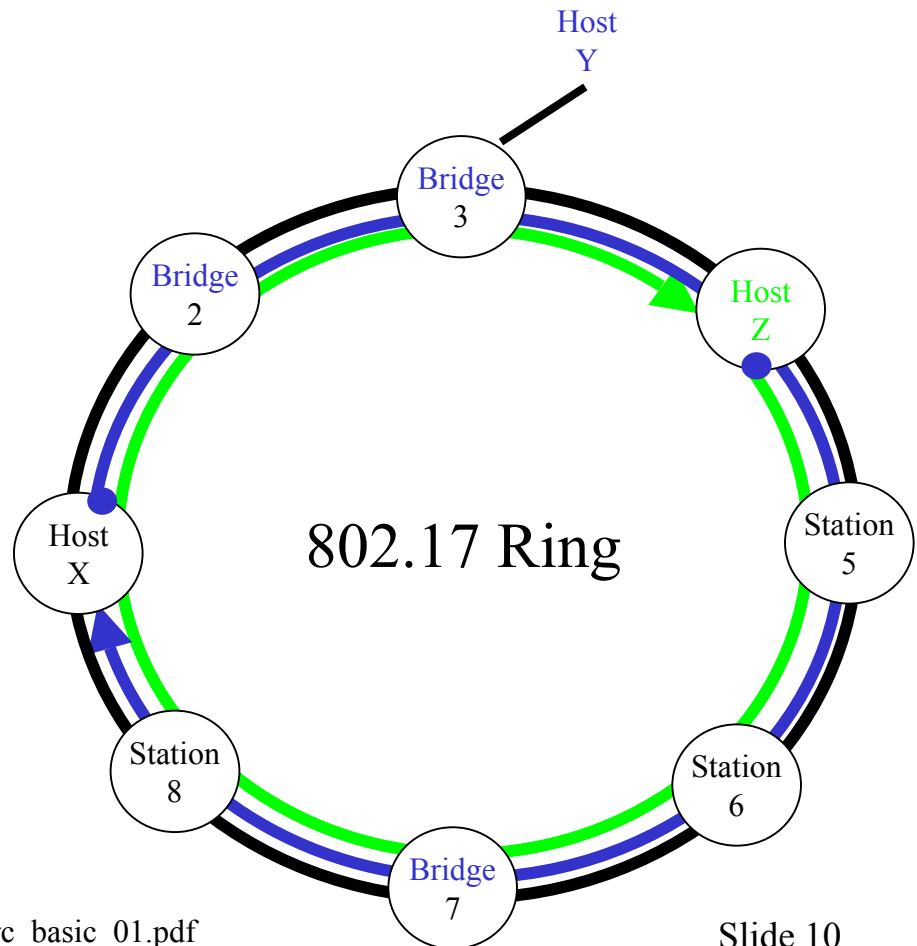
- Receive Rules
 - Host MAC Mode
 - If the MAC receive rules determine the frame is to be copied to the MAC client and the flooding indicator = *flood* the frame is not destination stripped from the ring by the station. The frame is to remain on the ring until the flooding procedure is complete. The frame will be stripped upon completion of the flooding procedure based on the flood stripping rules.
 - If the MAC receive rules determine the frame is to be copied to the MAC client and the flooding indicator = *no_flood*, the frame is destination stripped from the ring by the station. Frames must be stripped from the ring when the above condition is true.
 - Basic bridge MAC mode
 - If the flooding_indicator = *flood* the frame is always copied from the ring to its bridge relay.
 - If the flooding_indicator = *no_flood* the frame is not copied to its bridge relay unless the DA matches the bridge station's MAC address. If DA matches, the frame is copied and stripped.

Flooding indicator example



- Flooding indicator enables local host DA stripping without affecting bridges

- Host X transmits to Host Z. Host Z is in X's local topology DB. Frame is transmitted with FI = no_flood and stripped by Z. Intermediate bridges ignore X-Z frames and Z-X frames.
- Host X transmits to Host Y. Host Y is not in X's local topology DB. Frame is transmitted with FI = flood and stripped when flooding completes. All bridges copy the frame to their bridge relay.
- Host Y transmits to Host X. Frame is transmitted on ring by bridge 3 with FI = flood and stripped when flooding completes. All bridges copy the frame to their bridge relay.





Basic Bridging Compliance Recommendation



- Correct problem with current D1.1 draft regarding host destination stripping and its impact on 802.1D/Q networks
- RPR bridges do not operate in promiscuous mode
- Add flooding indicator to RPR controlHeader – Encoding of flooding indicator is part of BAH frame format proposals that to addressing this as well as other issues
 - Flooding indicator must be supported on all local unicast, remote unicast, broadcast, multicast frames for local frame format, and for all specified frame.DA semantics of the extended frame format.
- Modify MAC Tx/RX rules for hosts and bridges
 - Define host and basic bridge MAC modes
 - Hosts TX rules use topology information to determine if transmitted frames are flooded or not_flooded to other stations on the ring
 - Hosts do not DA strip flooded frames
 - Bridge RX rules do not support promiscuous mode
- Include overview text from annexF_comments_v1.pdf



Thank You!!