Report on bridging ad-hoc

September 2002

Introduction

- Groups focus has been on addressing 802.1 packet reorder, duplication, loss requirements
  - There is no guarantee that Service Data Units (SDUs) are delivered
  - Reordering of frames with a given user priority for a given combination of SA and DA is not permitted
  - Duplication of user data frames is not permitted

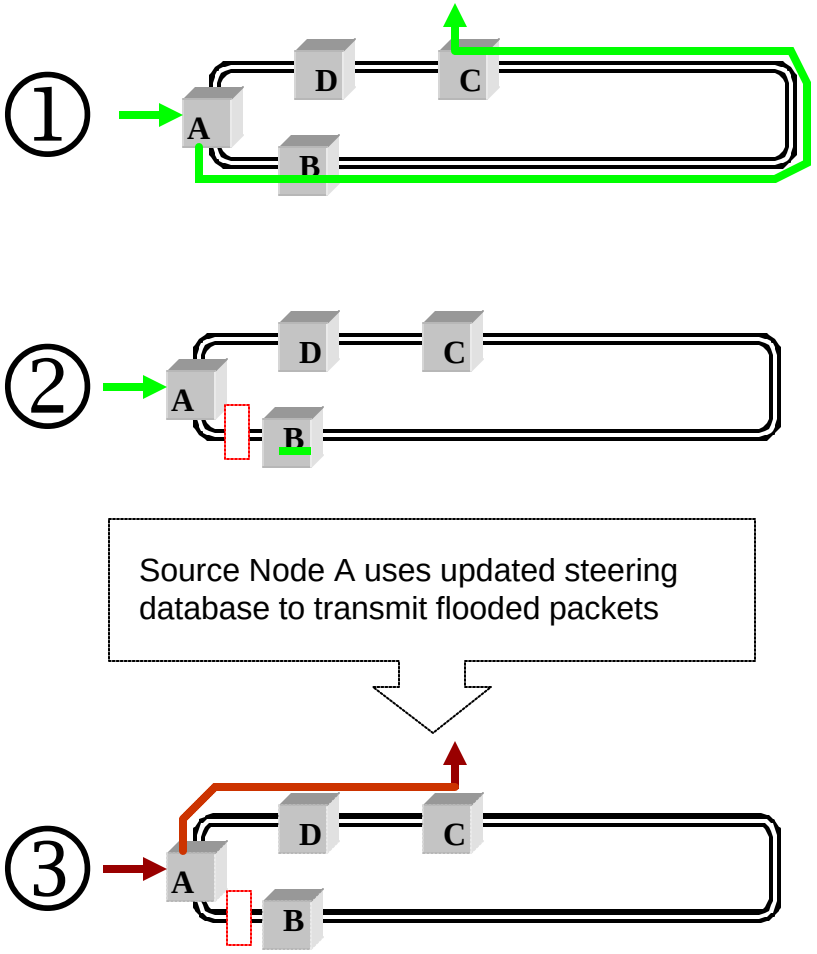
Protocols

- Older legacy protocols fail when packets are duplicated or reordered
- Spanning Tree Protocol (STP) preserves the “no reorder/duplication requirement” at the expense of restoration and topology convergence during failures (increased packet loss)
- Majority of newer protocols running today are more robust to packet duplication/reorder
  - IEEE development of Rapid Spanning Tree Protocol (802.1W) provides rapid network restoration (decreased packet loss) at the expense of introducing some packet duplication/reorder during network convergence

RPR Packet reorder/duplication

- Duplication and/or reorder can be manifested on the ring as a result of the following scenarios:
  - Ring (link or station) restoration events
  - Topology image of stations on the ring are different
  - Compound ring (link or station) failures resulting in segmented chains
  - Rapid cascading ring (link or station) failures

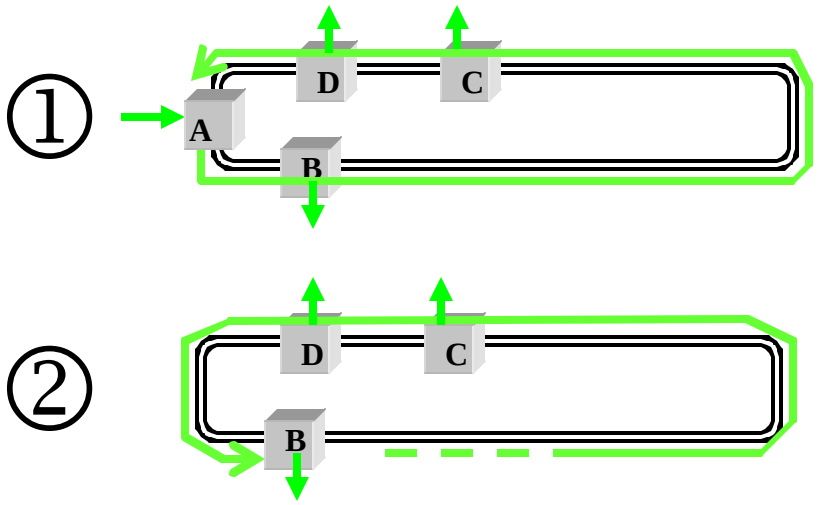
Reorder scenario example



Scenario Walk-thru

- At step 1, station A is sending unicast traffic destined to station C
- At step 2, link AB fails, a protection event is detected and protection control packets are launched
- At step 3, station A launches packets using new image
- However, if packet sent by station A at step 1 reaches stations C after a packet launched by station A at step 1, reorder can occur

Duplication scenario example



Scenario Walk-thru

- At step 1, station A is sending flooding (unidirectional) packets over the ring
- At step 2, station A disappears from ring while in-flight packets are traversing the ring
- In this case, station B could potentially see the same copy of the packet twice, thus packet duplication

BAH Proposals

- Bridging ad-hoc has formulated several proposals to address the 802.1 packet reorder, duplication, and loss requirements
- Common aspects of proposal
  - Requires additional control bytes in RPR header
  - Wrap State indication required
  - Purging mechanism to remove packets on the ring transmitted using an outdated topology image

Next steps

- Share with WG overview of proposals
- Arranging evening session to go over the details of our proposals
- BAH to assess the attributes associated with each proposal and continue to seek convergence amongst techniques