Linear 1:1 Protection Switching for P2P PBB-TE Connections
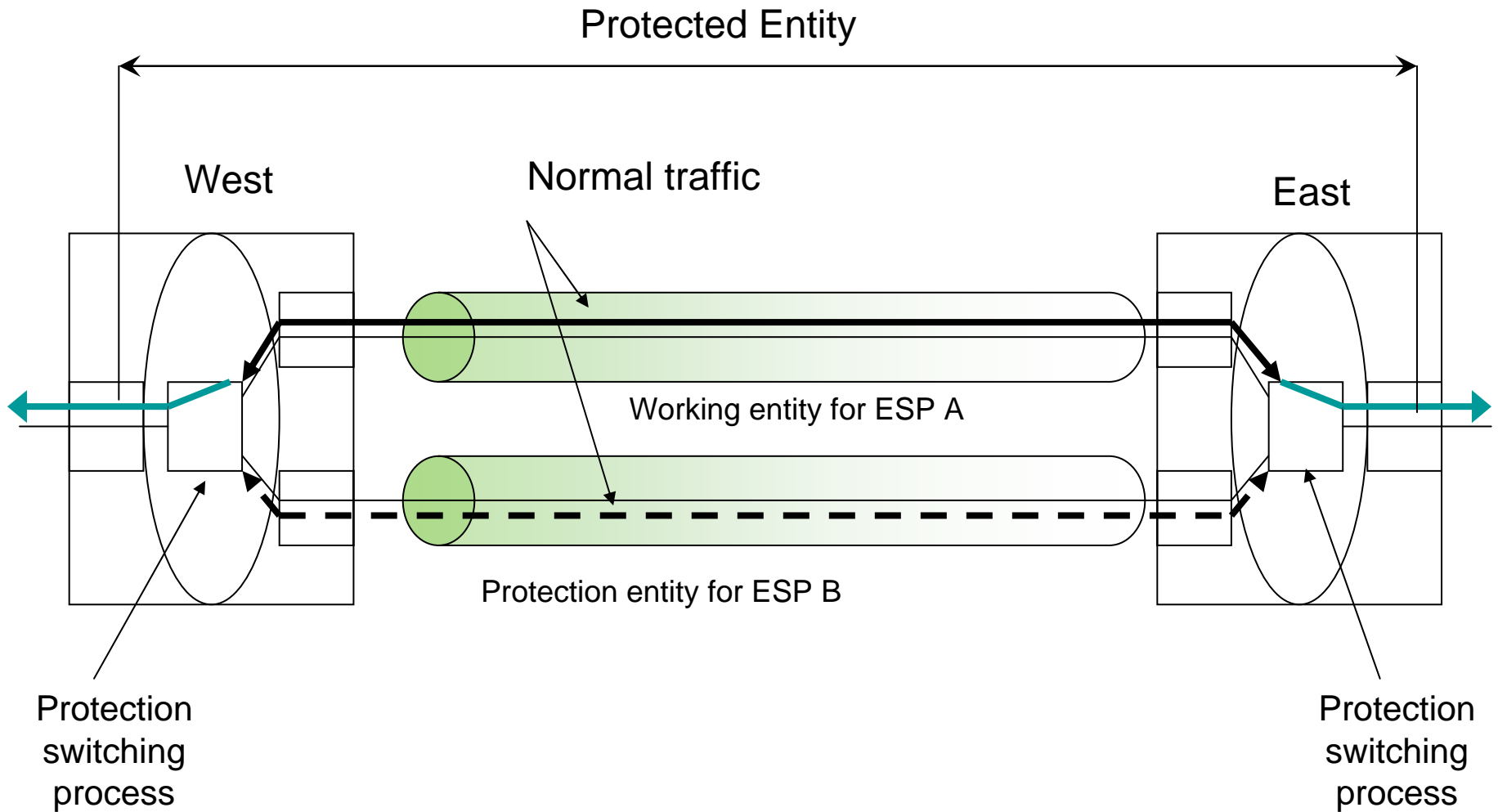
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Requirements-I

- Operating on a per tunnel basis (not per I-SID)
  - Protection can be offered or not depending on service requirements
- 1:1 protection: a protection entity is utilised to protect normal traffic signal.
- Bidirectional switching
- 100% of impaired working traffic should be protected for a failure on a single working entity
- The connectivity of the working entity and the protection entity should be periodically monitored
- Subsequent to a protection switching event frames should be delivered in-order
- Protection entity is dedicated to the working entity
- No extra traffic on protection entity
- Similar to those already in G.8031

Requirements-II

- **Both directions of working (protection) should be co-routed for operational simplicity**
- **Monitoring for both working and protection entities requires that MEPs be activated for the purpose of monitoring**
- **ESP monitored via CC messages**
  - CC message has same ESP DA/SA/VID as traffic
  - CC requirements set at time protection group established
  - Where the ESP DA is unicast CC message DA is also unicast
  - CC message rate is configurable
- **Revertive and non-revertive switching should be provided as options**
  - Revertive: normal traffic is restored to the working entity after the condition(s) causing a switch have cleared
  - Non-revertive: normal traffic is allowed to remain
- **Lock-out of protection, and manual switch commands should be supported**
- **Management Initiated Protection switching triggers**
  - Initiated by operator (Manual Switch/Non-Revertive)
  - Signal Fail is declared on active entity and is not declared on standby entity, and the detected Signal Fail
- **Unidirectional failure on working path triggers bidirectional switching action**
  - E.g. use of RDI as flag
- **Signal fail**
  - Includes loss of CC messages

PBB-TE 1:1 Protection Switching Architecture

Protected Entity

West

Normal traffic

East

Working entity for ESP A

Protection entity for ESP B

Protection switching process

Protection switching process

Normal traffic is transmitted via the working entity. There is no extra traffic on ESP B

PBB-TE 1:1 Protection – Signal Fail on working entity

West

East

(Normal traffic)

Working entity ESP#A

Protection entity ESP#B

Protection switching process

Protection switching process
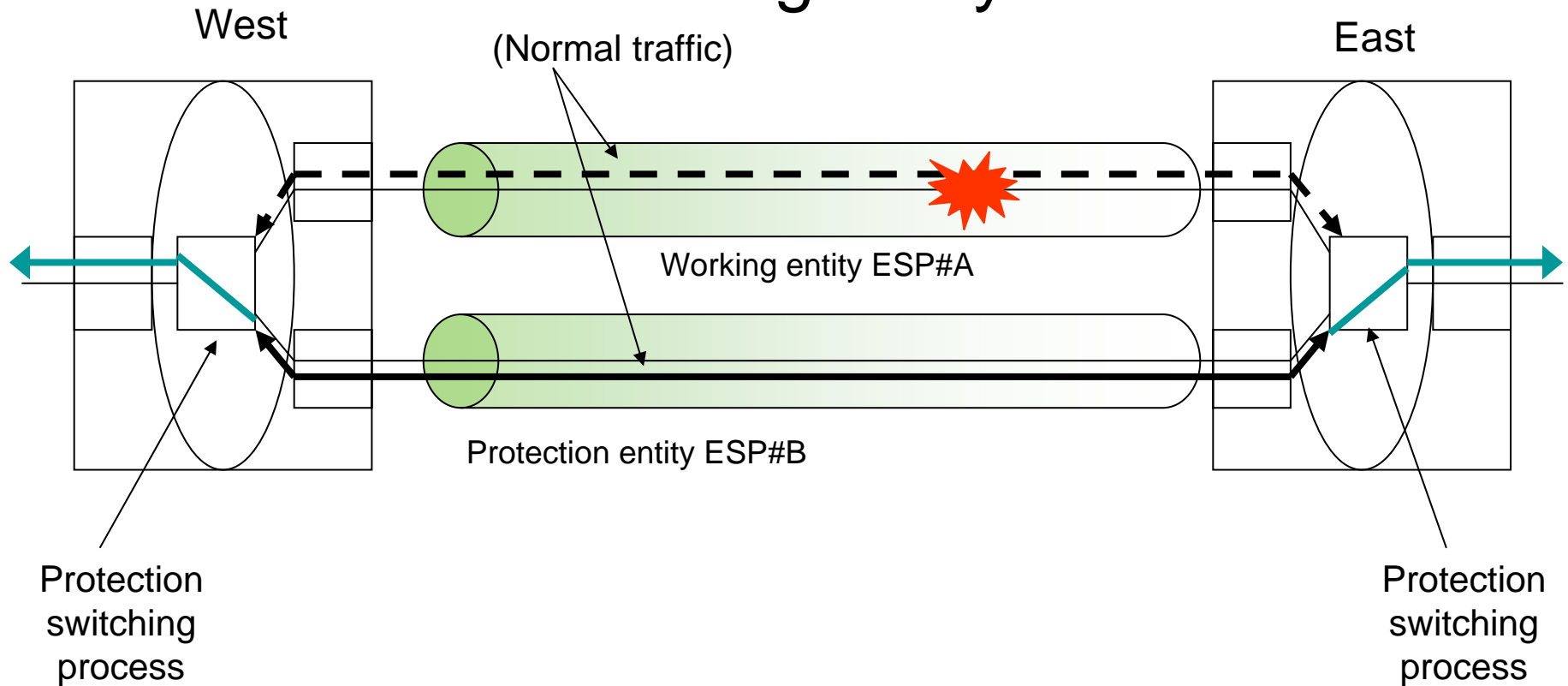
A protection switching event has occurred, due to signal fail condition on the working entity.
At the source node the normal traffic is forwarded to the protection entity ESP#B.
At the sink node, the normal traffic is received from the protection entity.

Observations

- These slides do not cover shared protection
- G.8031 provides useful material for considering implementation, but care is required as it is based on VLAN based Ethernet subnetwork connection protection