PBB-TE Segment Protection Requirements

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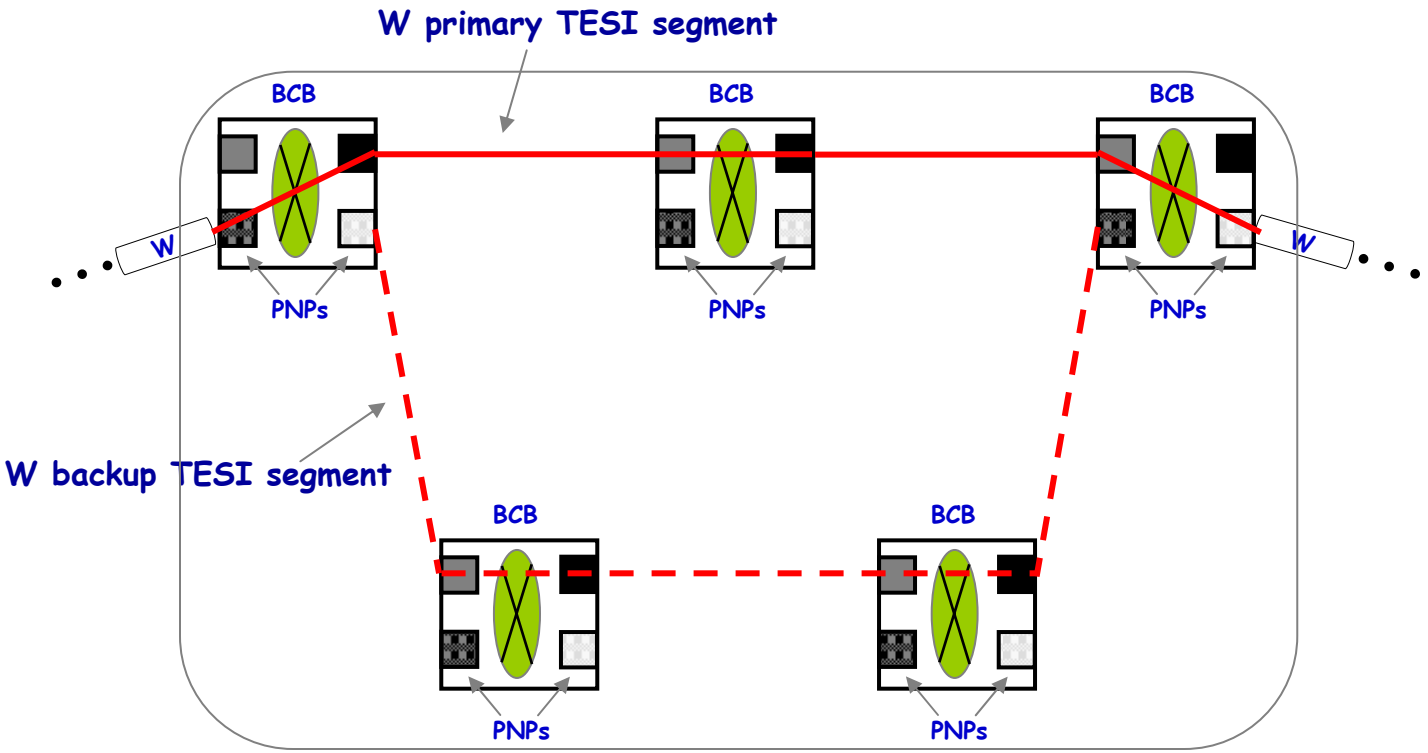
Motivation

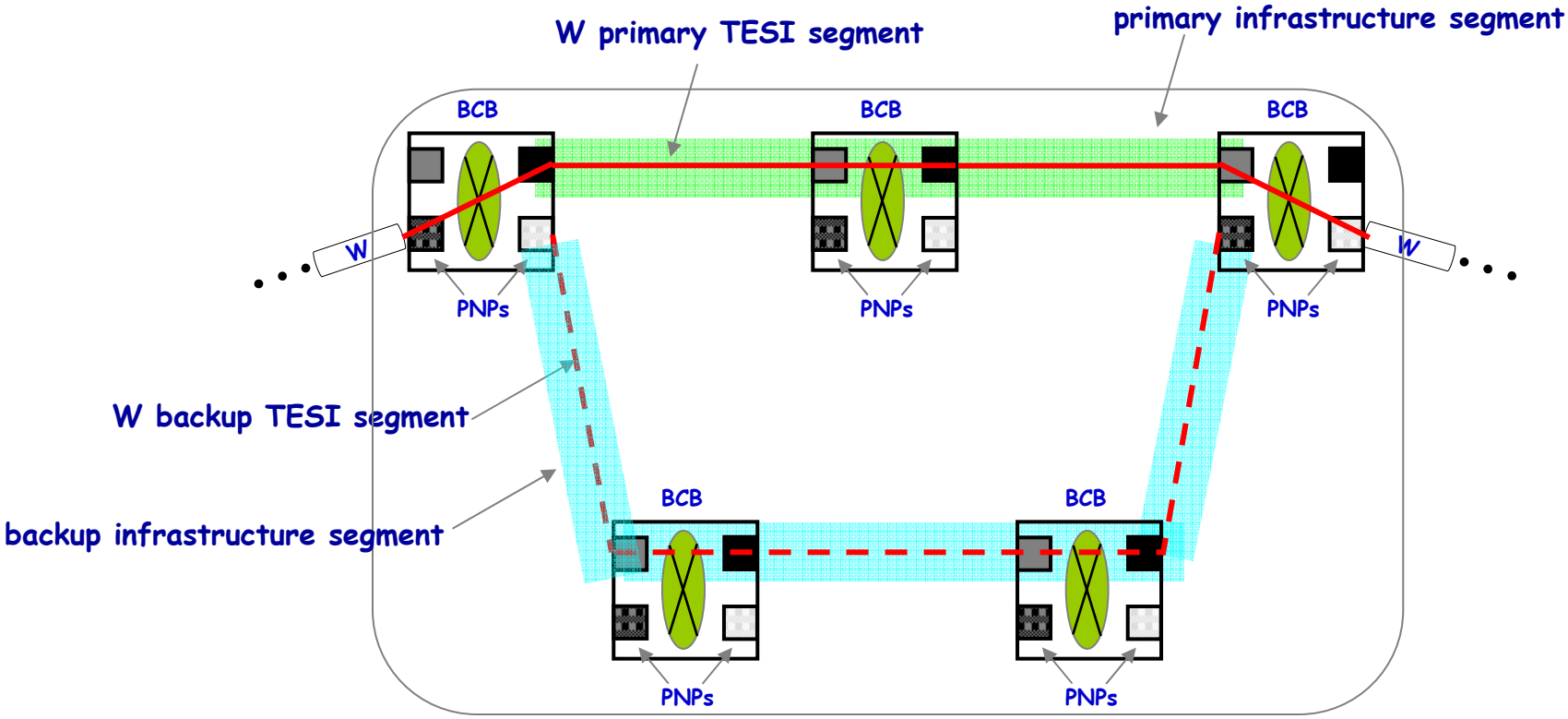
- **Address the relatively high failure rate of certain links or bridges within a network.**
- **Address the likelihood of concurrent failures occurring in different segments of a network.**
- **Allow maintenance activities to be performed independently in different segments of the network.**
- **Allow maintenance activities to be performed in one segment of a network without disabling protection in another segment.**
- **Localize changes in traffic distribution due to failure or maintenance actions.**
- **Efficiently protect portions of a PtMP TESI**

Terminology - TESI segment



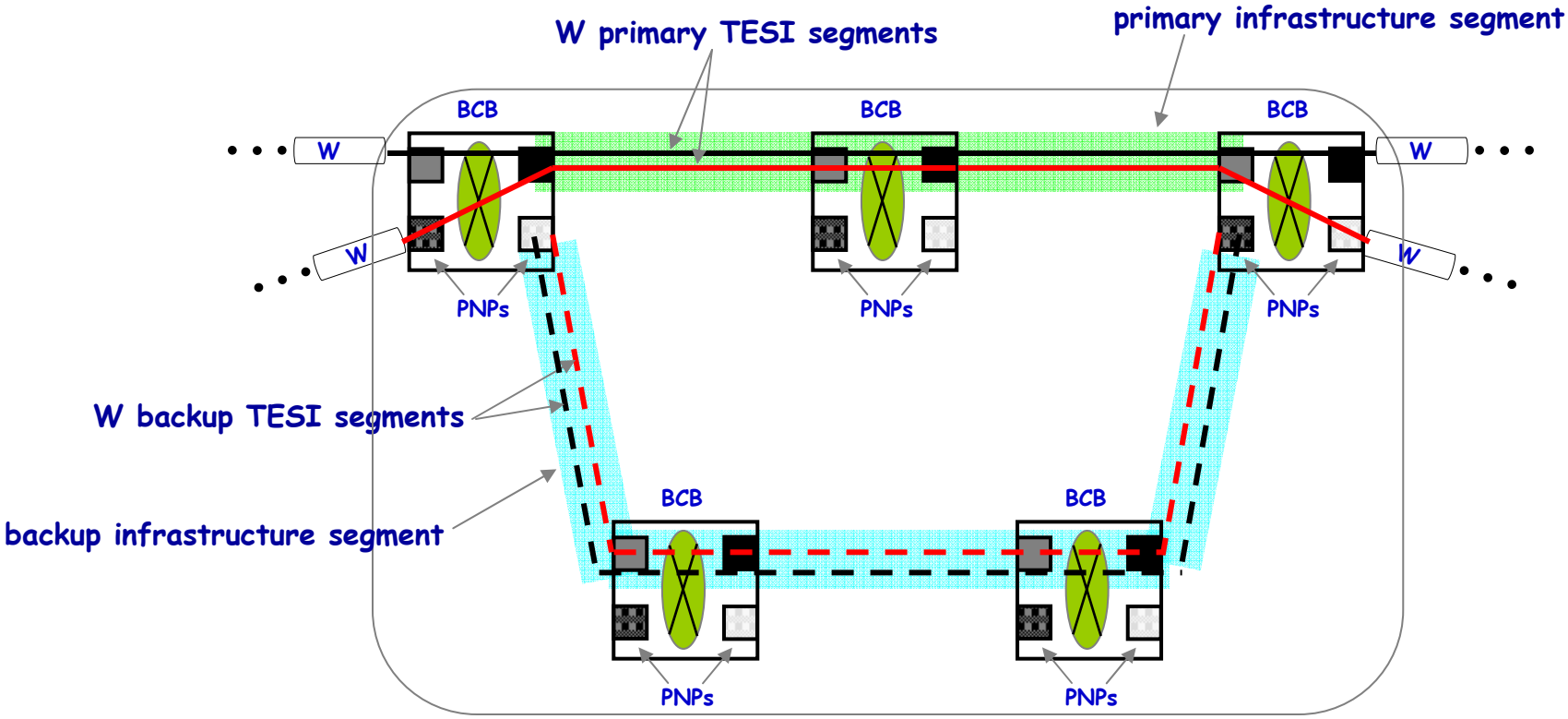
- **TESI Segment – Portion of a TESI bounded by a PNP at each end.**

Terminology – Infrastructure Segment



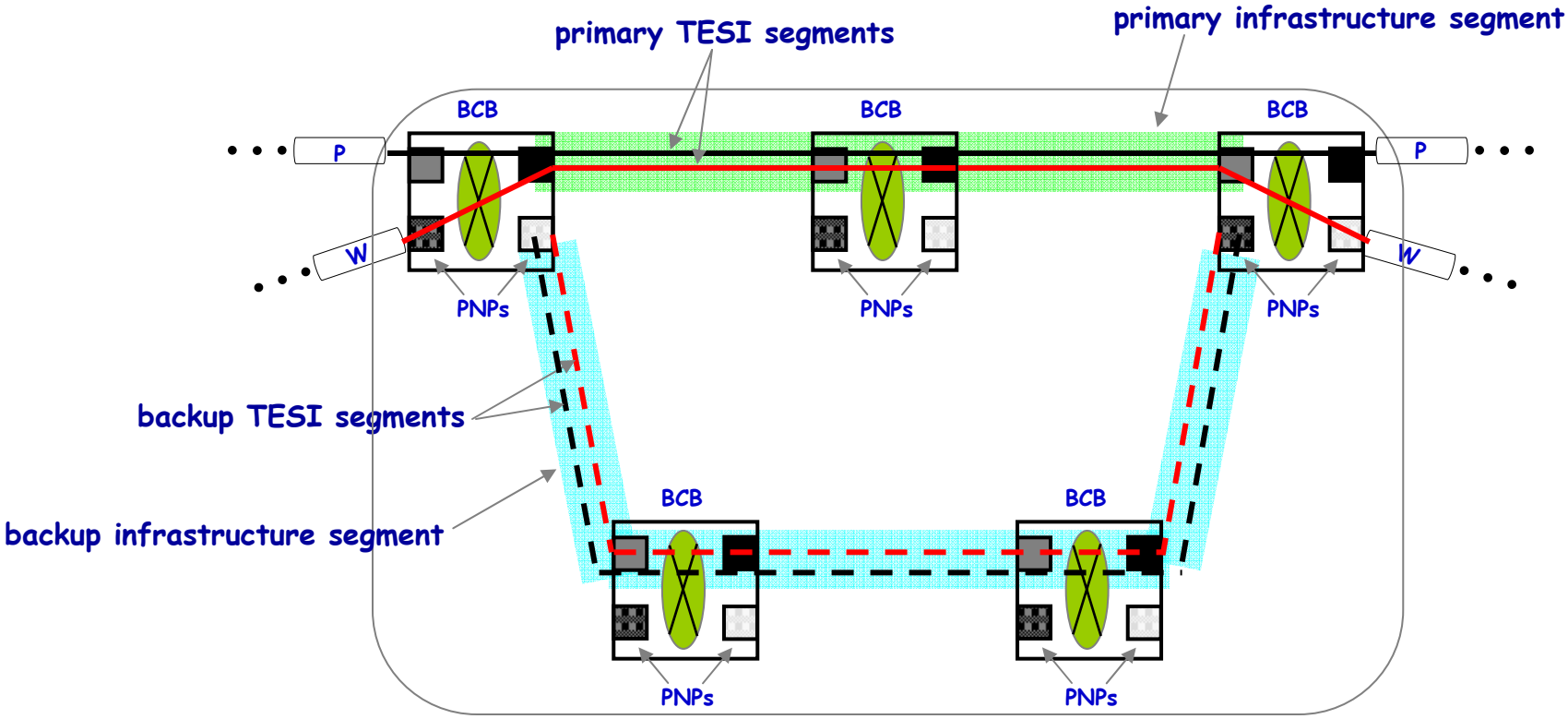
- **Infrastructure Segment – Sequence of links and bridges.**

Terminology – Multiple TESI Segments



- **Multiple TESI segments can be associated with an infrastructure segment (two working TESIs shown in figure)**

Terminology – Multiple TESI Segments



- **Multiple TESI segments can be associated with an infrastructure segment (one working and one protect TESI shown in figure)**

Segment Protection Requirements

- **Infrastructure Protection - Preserve connectivity of *all* TESIs transiting an active infrastructure segment on the failure of one or more links or bridges associated with that segment.**
- **TESI Data Path Protection - Preserve connectivity of *a* TESI in the presence of a TESI data path failure occurring within the active TESI segment.**
- **M:1 Protection – Support multiple backup segments (M≥1) to which traffic can be switched in the event of the failure of the primary segment. The backup segment having the highest provisioned priority value among operational backup segments is selected to be the active segment.**

Segment Protection Requirements

- **Domain Independence – TESI connectivity is maintained in the presence of a segment failure in *each* segment protection domain through which the TESI passes**
- **Operator requests - Support of operator requests: FS, MS, LO**

Guidelines

- **BCB-based – Segment protection can be implemented by a BCB (possibly with minor modifications).**
- **Frame Size Preservation – Frame size is not increased by the deployment of Segment Protection.**
- **Rapid Segment Protection – Segment failure protection time should be shorter than the detection time for end-to-end protection. This would make it unnecessary to increase the hold-off timer value for end-to-end protection.**