DP Conformant Components

Abdul Jabbar
GE Research

Objective

- ***Discuss conformant components for Aerospace Profile***

References:

- **IEEE P802.1DP-draft0.2, Time-Sensitive Networking for Aerospace Onboard Ethernet Communications**

Introduction

- TSN features/standards allow variety of design patterns. The objective of a profile is to select features based on expected use cases and design patterns.
- Conformant components approach:
  1. Large number of conformant classes with specific/narrow requirements
  2. Small number of conformant classes with large set of requirements (shalls)
  3. Small number of components with a lot of optional requirements (mays)

TSN Profile(s) for Aerospace

Required/Defined Functions

Functions	Profile Specification
Time Synchronization	802.1AS-2020*
Egress Traffic Shaping	Credit Based Shaper Time Aware Shaper*
Redundancy	Frame Replication and Elimination
Ingress Policing	Per-Stream Filtering and Policing
Stream Separation/isolation	Stream identification, transformation, and separation, stream forwarding
Configuration	Fully centralized, Yang models
Management and Monitoring	Required error, fault, and performance metrics

How many conformance classes and components?

Starting point: Synchronous vs. Asynchronous; Bridges vs. end stations (4 so far)

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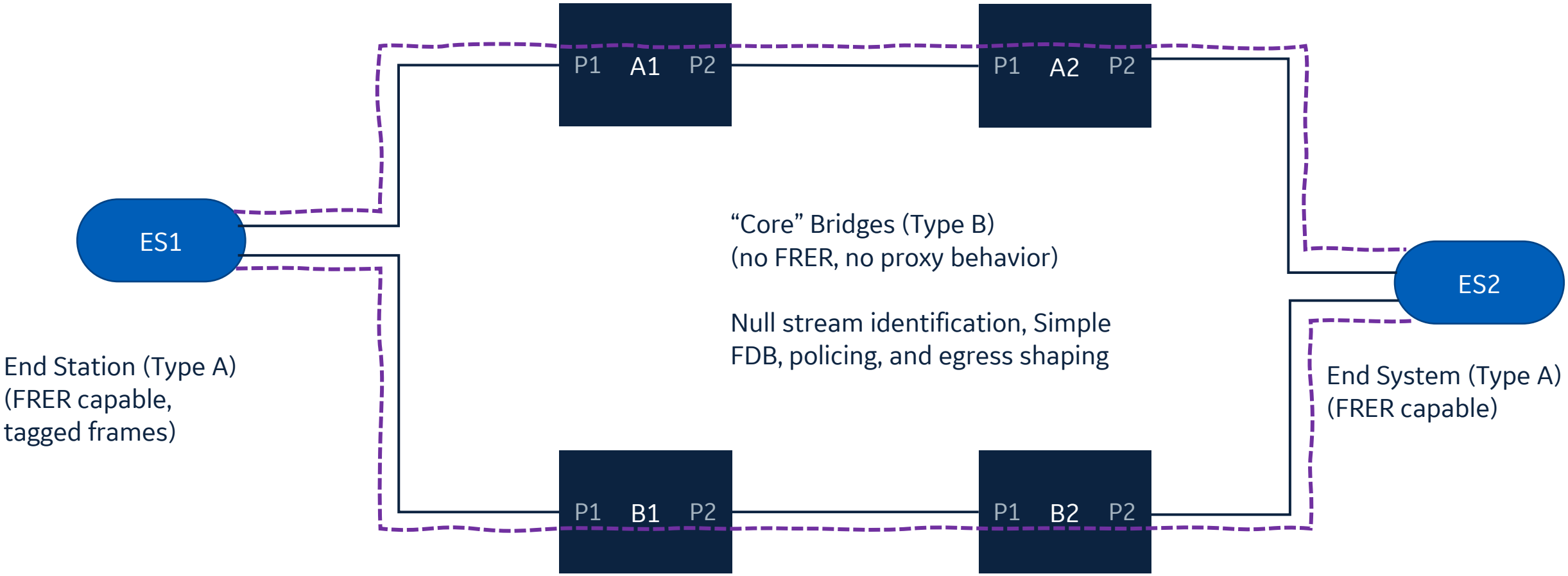
Green highlighted options are straightforward – every device/ network component shall support in the same manner (as per synchronous or asynchronous profile)

Yellow highlighted presents some optionality depending on use case and design pattern

** Only applicable to Synchronous profile*

Potential Design Patterns

Converged Synchronous Network



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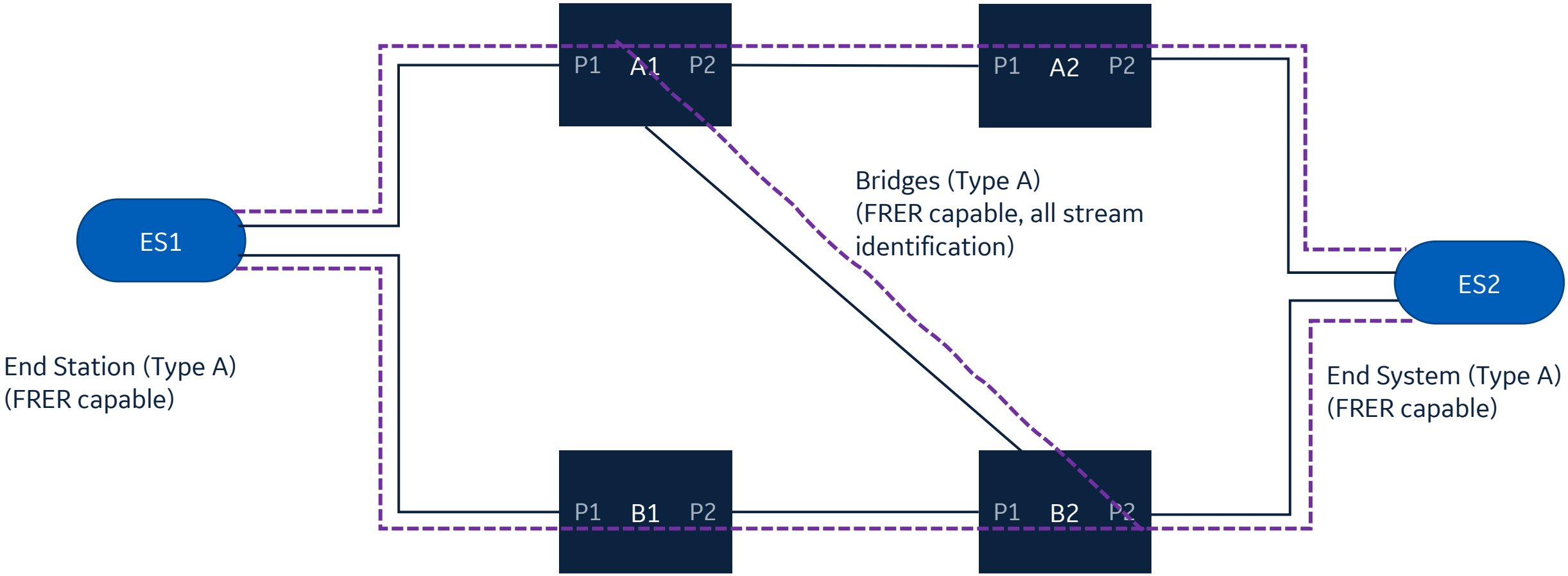

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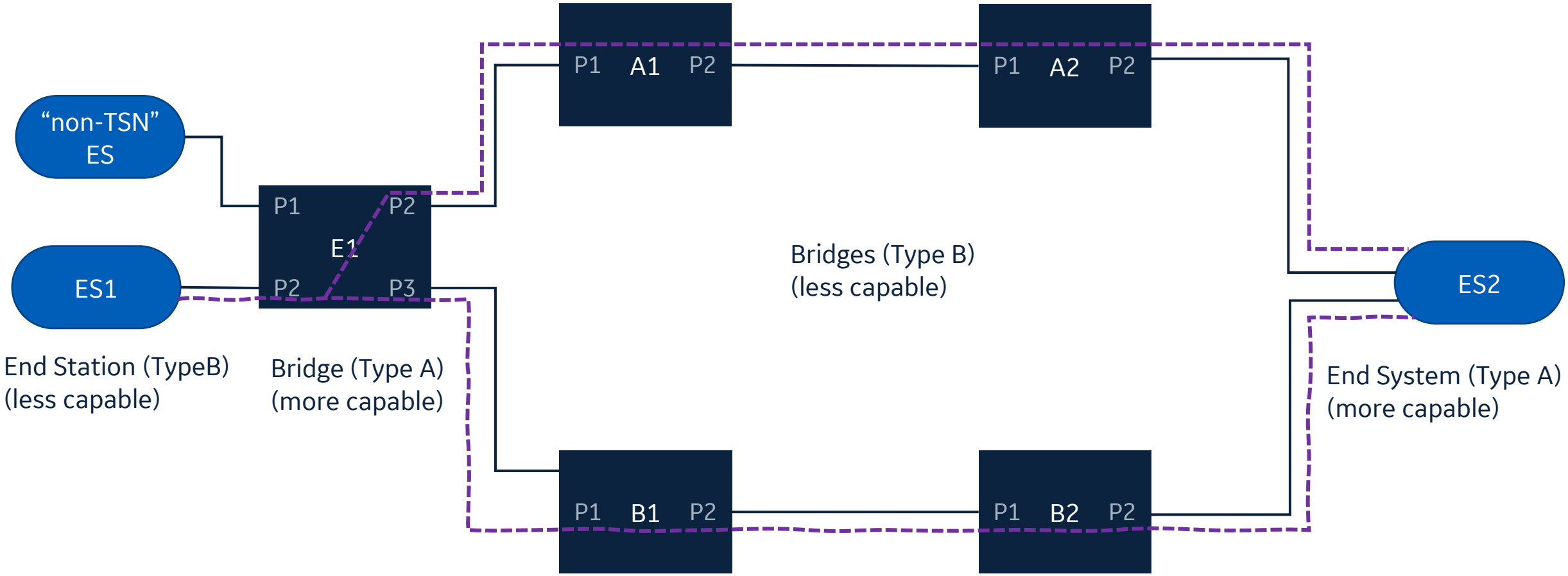

Conformant Components Proposal

Option A

Four main components (along with some common components)

1. Synchronous End Station
2. Synchronous Bridge
3. Asynchronous End Station
4. Asynchronous Bridge

FRER, Stream identification/tagging/forwarding and other capabilities addressed via optional (should, may) clauses

Option B

Eight main components (along with some common components)

1. Synchronous Type A End Station
2. Synchronous Type B End Station
3. Synchronous Type A Bridge
4. Synchronous Type B Bridge
5. Asynchronous Type A End Station
6. Asynchronous Type B End Station
7. Asynchronous Type A Bridge
8. Asynchronous Type B Bridge

Fewer options, which are primarily used for degree/level of supported feature.

E.g. Number of queues per port

Summary

- Discussed options for defining conformant components for DP

Building a world that works