POLICY BASED CONFIGURATION

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Background

- Industrial Automation previously consisted of islands of automation, usually provided by one vendor, that might or might not have been connected to a plant-wide network.

- This has been slowly changing as the Industrial Internet of Things and focus on Industrie 4.0 evolves.

- TSN provides the toolset for convergence of multi-vendor applications on the same wire.

Standards in Play

- TSN is a collection of **many** standards that can be used in many different ways

- How do we choose:
  - *Centralized, Hybrid, or Fully Distributed administrative models?*
  - *Credit based shaping, time based shaping, "old" technologies like QoS, or all three at once?*
  - *Scheduling and/or Preemption and/or Ingress Policing?*

- Which do we use when?

- Do certain use cases pre-determine specific mechanisms?
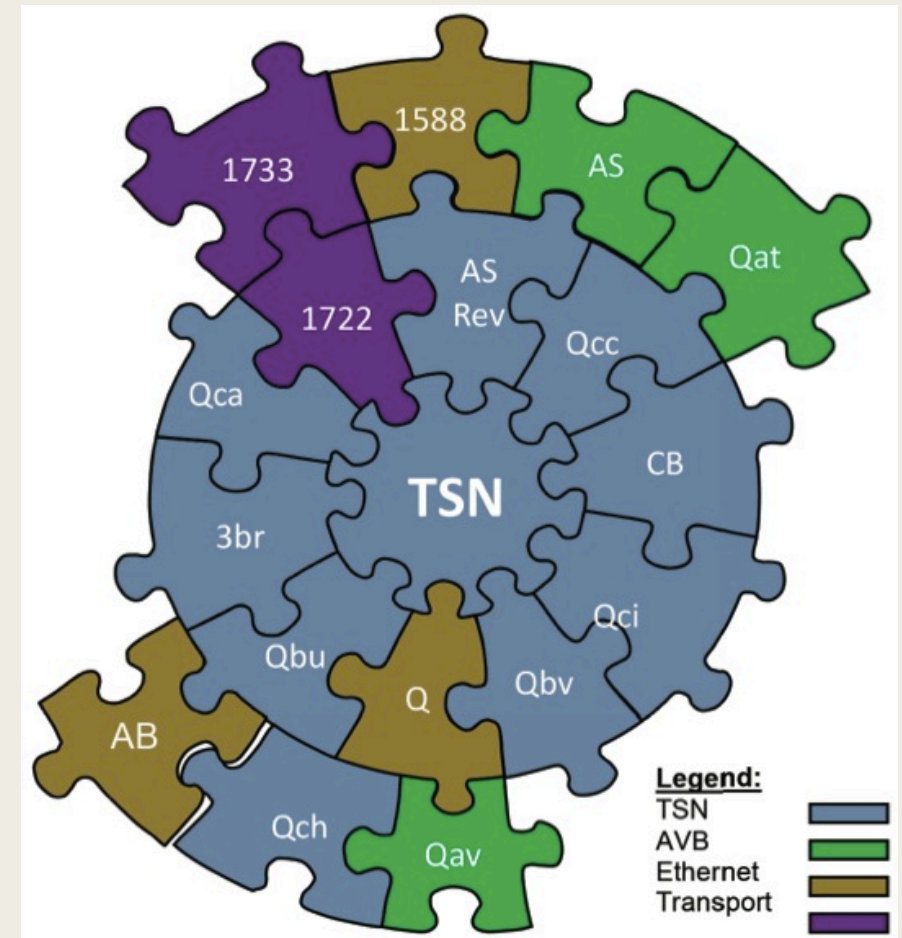
Policy Based Prioritization

■ Opinion: these are really the wrong questions to ask.

■ Opinion: The right question to ask is:

How do we as industrial automation device vendors (and supporting members) empower our customers to decide which technologies to use, and make traffic prioritization decisions that are not burdensome, but enable them to successfully meet their industrial automation needs?

■ This is "Policy Based Prioritization"

What Does This Mean?

- As standards developers we should **focus on requirements** instead of techniques to meet those requirements where possible. This means being inclusive of multiple techniques.
  - *Example: Redundancy, versus ring/redundant star/mesh*

- We should focus on **supporting multiple approaches** instead of mandating one approach, provided they work correctly for the application.

- We should **characterize** the traffic generated by industrial use cases, rather than specifying requirements

What does this not mean?

- The end user should **not be burdened** to understand shapers, or the underlying network technology.
    - *They should be given information about all the traffic running on their TSN domain (term check?) and be presented with easy interfaces to choose what will meet their needs (I.E. traffic priority based on application).*

An Example Workflow:

- A user has two applications from two different vendors that will share one TSN domain.

- Application 1: The user goes into the application configuration tool (CUC, offline configuration tool) and is walked through setup of the application. If available, the user is given the choice to use a CNC. If multiple shapers are appropriate for the application, the user is given a selection with the default shaper already chosen.

An Example Workflow

Line PLC + All Controllers

CNC

HMI
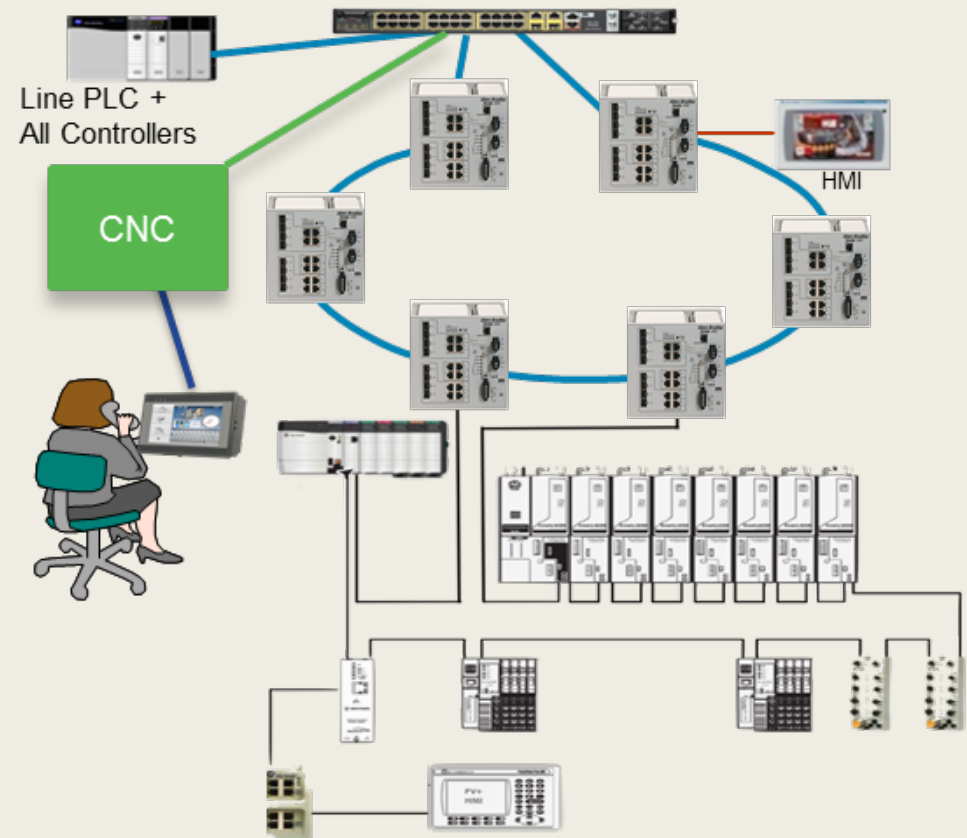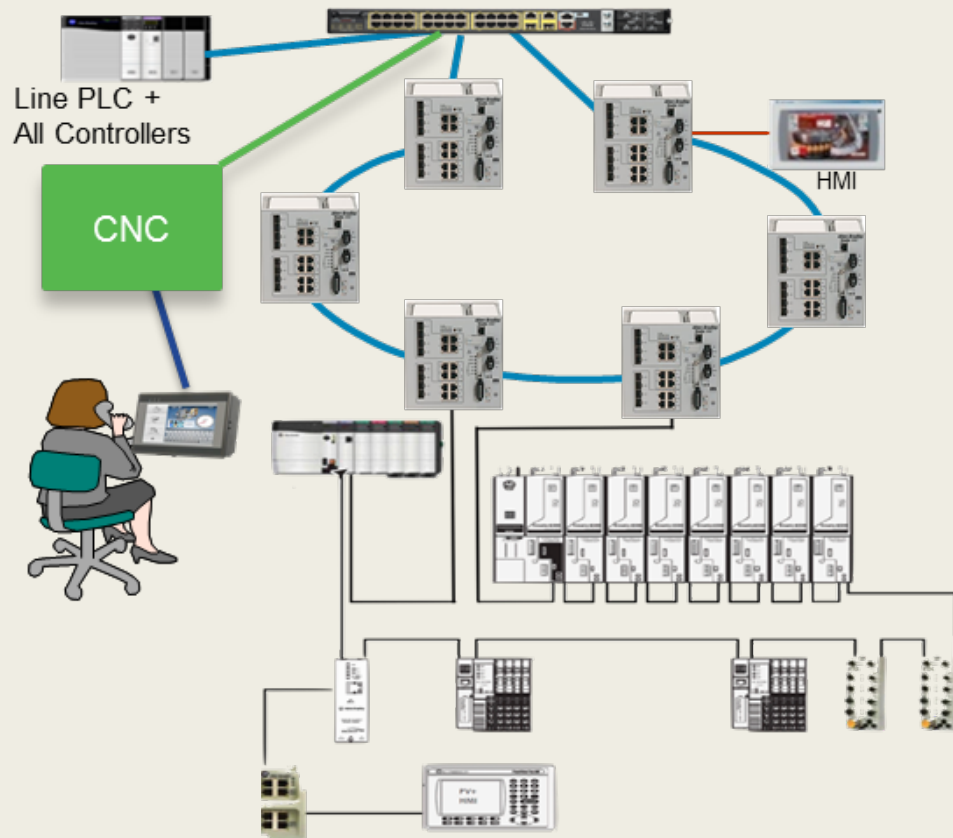
- Application 2: The user goes into the second application configuration tool and is walked through setup of the application. The application tool reads current configuration from the CNC/distributed topology and presents a choice to the user of shapers to use, if multiple are appropriate for the mixed application. The application may give the user the ability to pick the higher priority application (1 or 2).

Questions?