

## User Stories

V2 – 9/11/20

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### Terms

ES EndStation

B Bridge

ME TSN Domain Management Engine

Device Bridge or End Station

### Constraint

No application actions are shown; only end stations and bridge related behavior

Address assigned may be done by DHCP/DNS and is not shown.

The TSN Domain Identifier is expected to be unique in space and time to prevent accidental unintended combination of TSN domains (e.g. different feature sets and configurations may be active in these domains).

### US1: Simple TSN Domain Startup

Customer creates a TSN Domain by configuring the ME with a TSN Domain identification and a network policy.

As a next step he creates a network out of four entities:

- ME
- B
- 2x E

as shown in Figure 1.

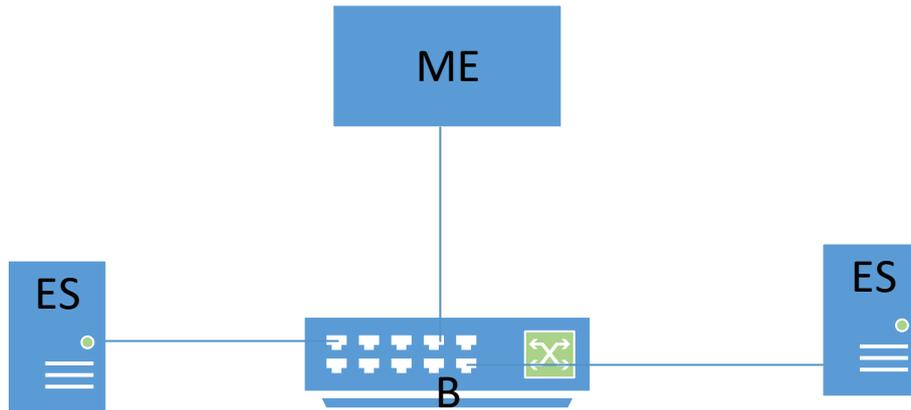


Figure 1: Simple TSN Domain

### Expected behavior

After power on, the ME discovers the connected network. For any discovered device assigned to its TSN Domain the Ethernet portion will be configured according to the ME stored policy.

Thus, all devices of the TSN Domain will be configured according to the ME network policy.

Any unused port will be configured as “TSN Domain boundary”.

### US2: Plugging an additional device

Customer plugs another end station.

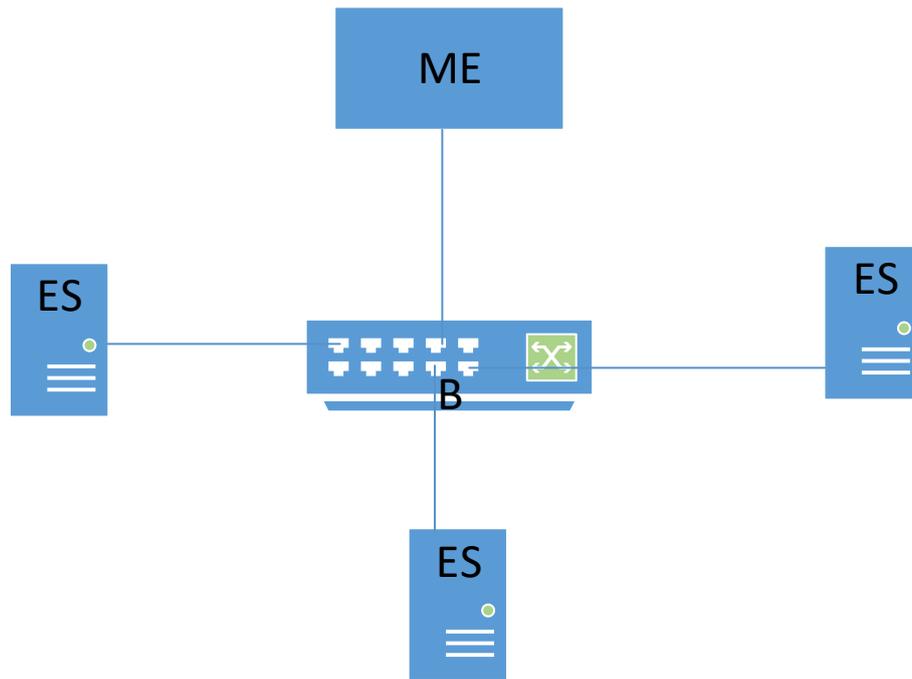


Figure 2: Simple TSN Domain – plug an ES

#### Expected behavior

ME discovers the additional connected device through the use of Topology Discovery, checks (by using the TSN Domain identification) whether it belongs to this TSN Domain.

If it belongs to the TSN Domain, then the ME configure the Ethernet portion according to the ME stored policy.

If not, no action.

#### US3: New Device Discovery

When a user plugs a new device into a Time Sensitive Network domain, the user needs to be able to configure the device through the ME, and thus the ME needs to know it exists.

##### Expected Behavior

LLDP is implemented on every device that is 60802 conformant. The device plugged in will advertise its presence and identifiers to adjacent nodes. Identifiers must include MAC address, IP address, and TSN Domain Identifier.

Adjacent nodes can provide information about the new device to the ME. Adjacent nodes can store information about the new device in their memory to be read by a ME. Time constraints (60802 Use Case 20) may require the adjacent node to provide information to the ME.

#### US4: Topology Updating

A user needs an up-to-date topology of a time sensitive network.

Unrestricted

#### Expected Behavior

A ME can on a periodic basis walk its' TSN domain to ensure the stored topology is still valid.

#### US5: Removing a Device From The Topology

When a user removes a device from a TSN domain, the user needs to see this device removed from the ME.

#### Expected Behavior

The removed device will no longer be a part of the discovered topology.

Adjacent nodes can provide information about the removed device to the ME. Adjacent nodes can store information about the removed device in their memory to be read by a ME. Time constraints (60802 Use Case 20) may require the adjacent node to provide information to the ME.

#### US6: Combining two TSN Domains

A user introduces a new physical link that joins two TSN domains.

#### Expected Behavior

If each TSN Domain has the same identifier because they were previously combined or engineered to be combined by sharing compatible TSN mechanisms and identifier, the two domains will be joined into one. If each TSN domain has an independent ME, one ME will be selected. If the identifiers are different TSN Interdomain communications may be established by the Management Entities.

#### US7: Splitting a TSN Domain

A user removes a physical link that creates a single TSN domain.

#### Expected Behavior

Each network will continue to operate as two separate TSN domains, and are managed by separate Management Entities. If one of the resulting domains does not have a ME, no functions that require an ME will be available. Each will automatically maintain the same TSN Domain Identifier.

#### US8: