Portal Associations in P802.1CS D2.1

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P802.1CS D2.0

1. Clause 7.2 of IEEE P802.1CS D2.0 (the January 2019 draft), which describes state machine creation, was very complex and tied tightly to LLDP, even though LLDP was not required.
2. The text in D2.0 was somewhat confused, especially in the descriptions of the primitives in Clause 10, between the creation and the operation of the LRP-DT and LRP-DS state machines.
3. The descriptions of TCP operations were vague.
4. Bottorff and Congdon suggest simplifying the state machine creation mechanism and decoupling LLDP from control of LRP by the application.

D2.0 State machine creation D2.1

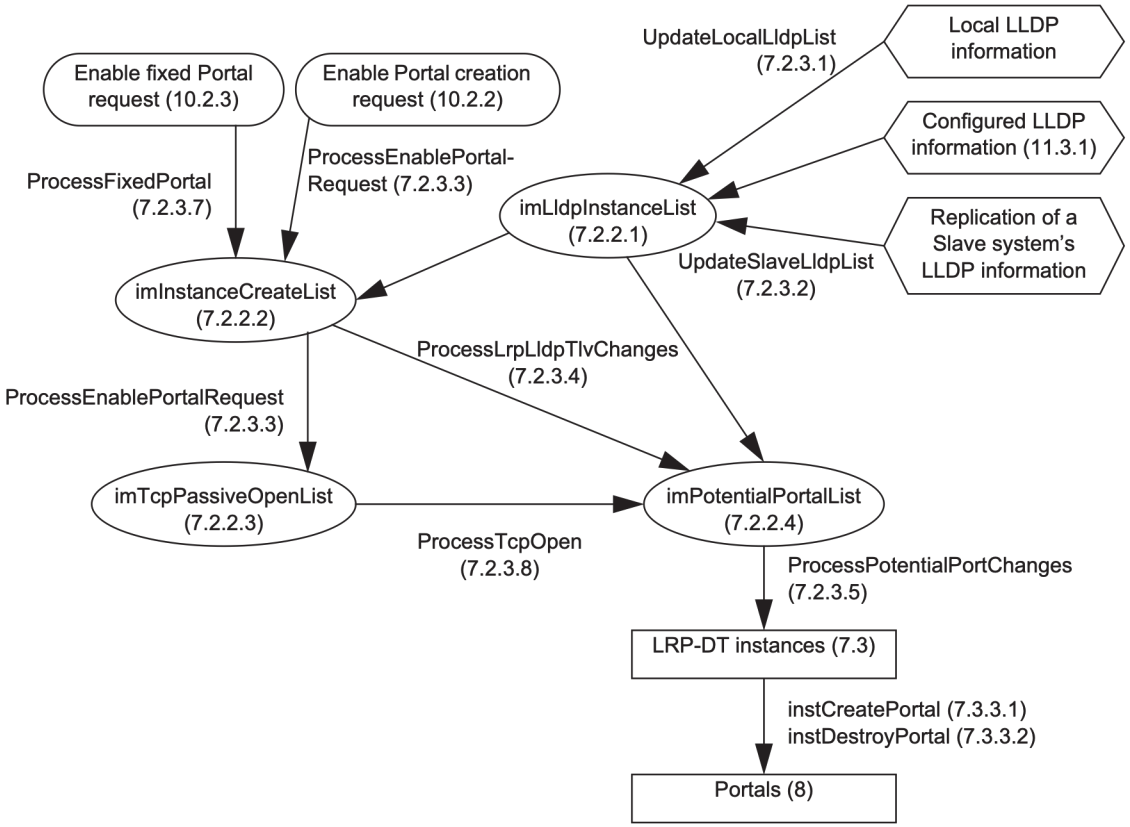

Figure 6-8—State machine creation

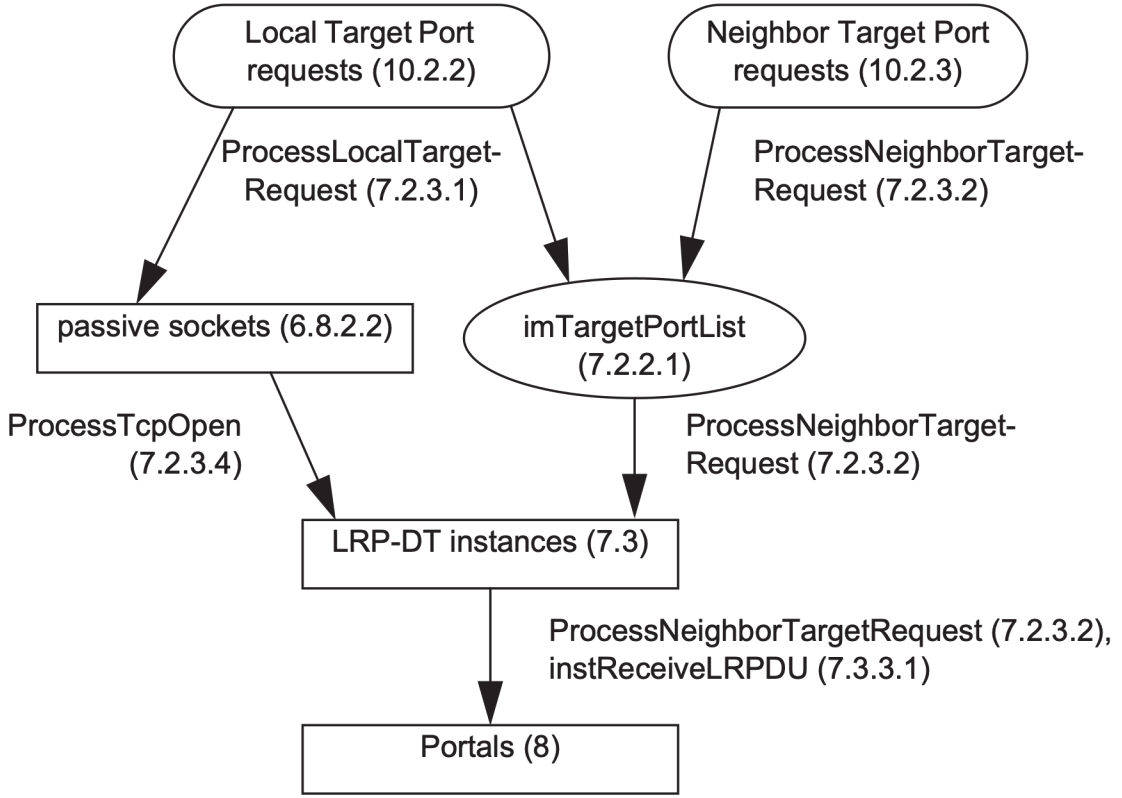

Figure 6-8—State machine creation

State machine creation

1. The application creates (via primitives) local target ports and attaches remote target ports to them. (This database can be the same information that is supplied by LLDP, if desired.)
2. This database creates LRP-DT instances and, if the remote target information is complete, Portals, and the Portals start Hello transmission.
3. Passive TCP LRP-DT instances are always created. Receipt of an incoming connection creates a Portal that does **not** yet send Hellos.
4. The same non-sending Portal is created for an ECP LRP-DT instances if the an ECP local target port is given, but no remote target port.
5. When a Hello is received, the local target port it names must exist. Whether remote target port is in the table or not, Hello is offered to application, and if approved, Portal is created (if necessary), the remote port is added to table (if necessary), and Hellos begin transmission (if not already being sent). If not approved, nothing changes.
6. **Application controls the table** – not LLDP or LRP directly – so Portals and LRP-DT instances are solely by 1) manipulating the table and 2) the receipt of Hello LRPDUs.

These changes to D2.1 had large consequences and follow-on impact

- Three tables in Clause 7 and Clause 11 → one table in Clause 7.
- No read-write objects in MIB.
- TCP is handled in terms of IEEE Std 1003.1 POSIX sockets.
- Application is free to couple LLDP and/or port state to the creation/destruction of Portals (Applicant + Registrar) arbitrarily.
- Portal maintenance primitives are now:
  - Local Target Port request
  - Remote Target Port request (Enable [Fixed] Create & Destroy requests gone)
  - First Hello indication (was: Portal Create indication)
  - Associate Portal request (was: Complete Portal create)
  - Portal Status indication (unchanged)

A possible addition to D2.2

- It would be possible to change the the Hello LRPDU to allow the omission of the MyNeighborChassisIdTLV and PortId.
- This would allow the **discovery of neighbors via Hello messages**, in addition to using LLDP and/or configuration.
- This has to be thought out carefully before adding it to the document.
  - It probably only applies to ECP sent to a nearest-bridge or nearest-non-TPMR type of MAC address. (It doesn't make much sense for TCP, because at present, we have only LLDP to ensure that the target ports are, in fact, connected.)
- **The editor is not going to add this feature unless someone makes a ballot comment.**

Summary

- D2.1 is **19 pages shorter** than D2.0.
- D2.1 is **36.081% simpler** than D2.0.
- D2.1 was more difficult for the Editor than expected.
- The simplification is, I think, worth the effort.
- Discovery via ECP Hello LRPDUs may be possible.

Thank you