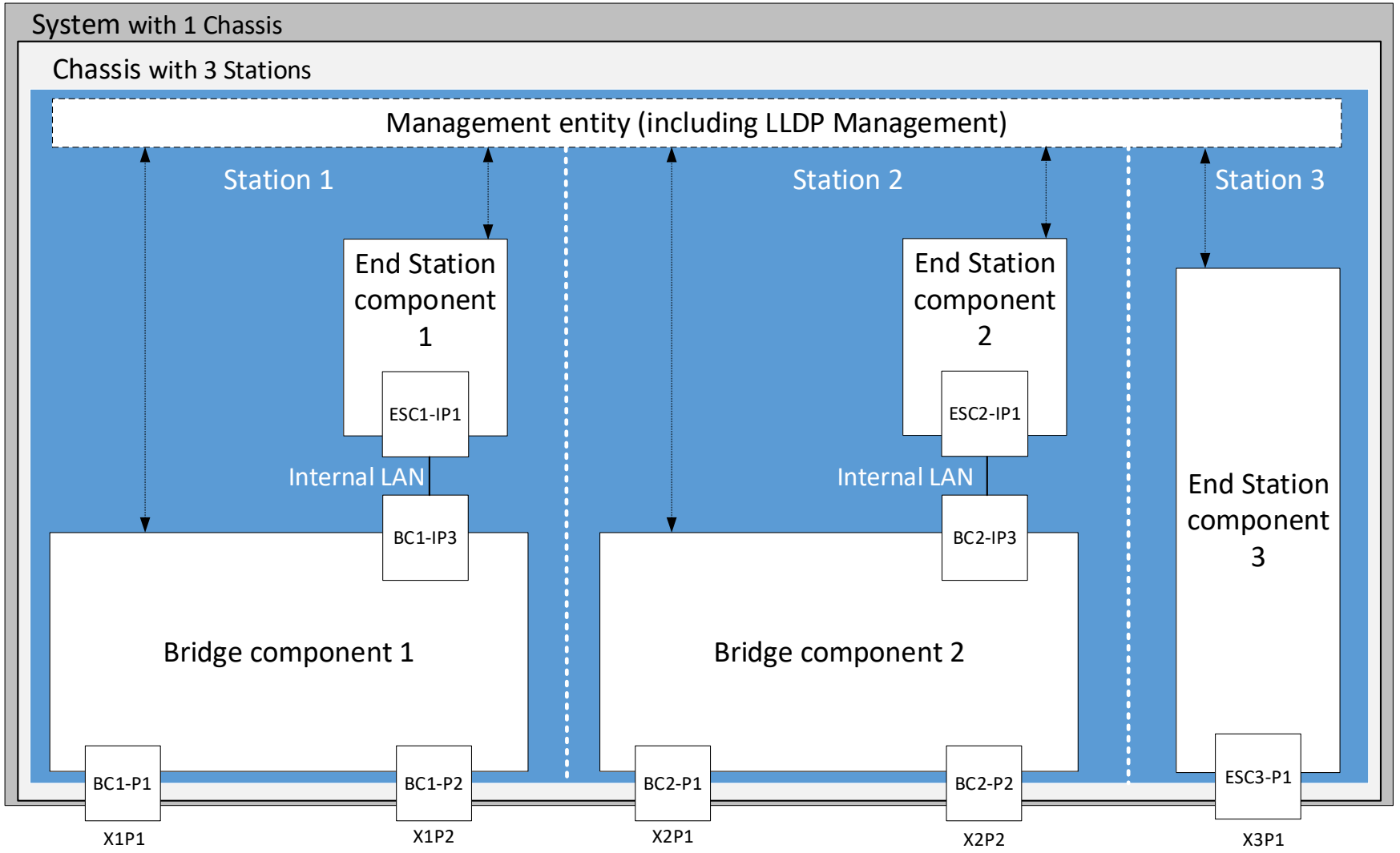
IA Device Management Model supporting “Bridged End Stations”

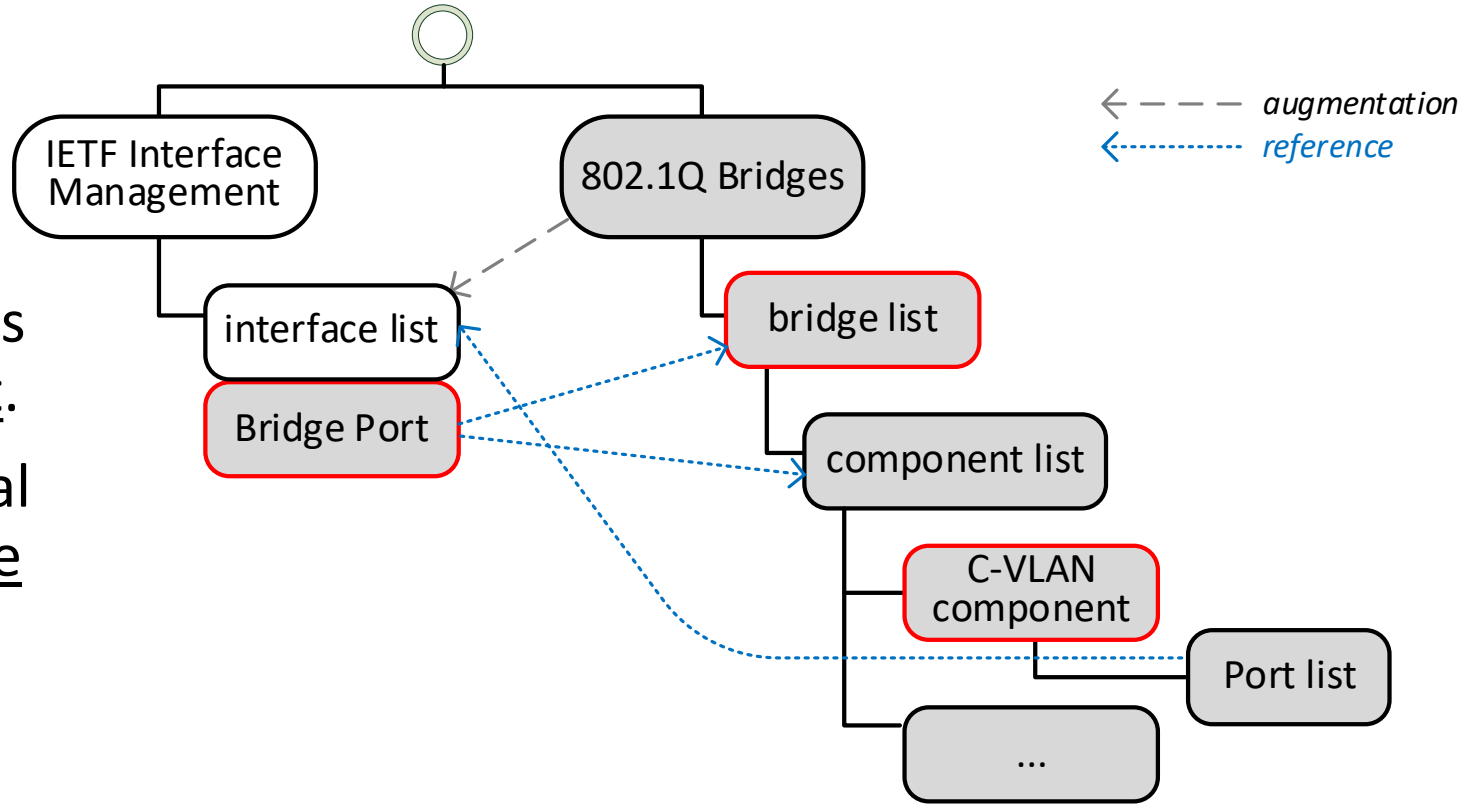
conformant to
IEEE 802.1Q
IEEE 802.1AB
IEEE 1588 / IEEE 802.1AS

Example IA Device

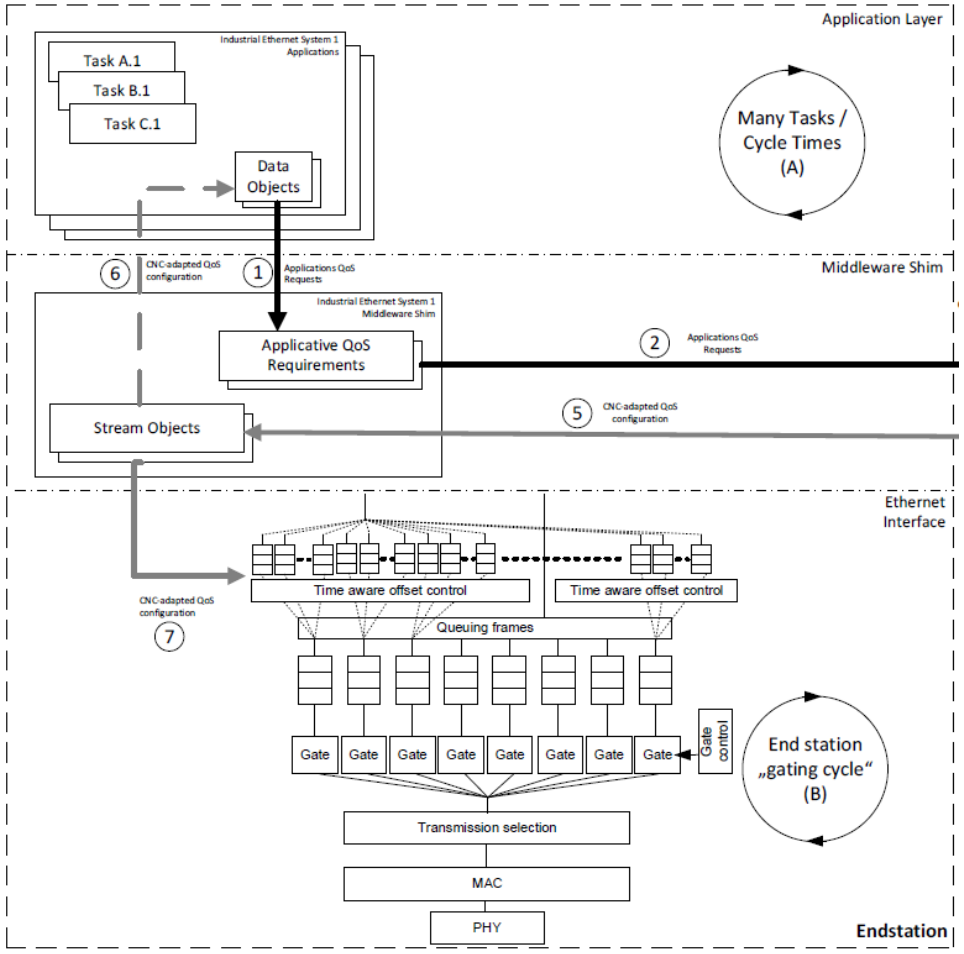


IEEE 802.1Q Bridge Model – YANG based

- Each station of an IA Device is modeled as a bridge.
- Each component of an IA Device is modeled as a C-VLAN component.
- Each port of an IA Device (external or internal) is modeled as a Bridge Port.



End station components are IEEE 802.1Q Bridge C-VLAN components



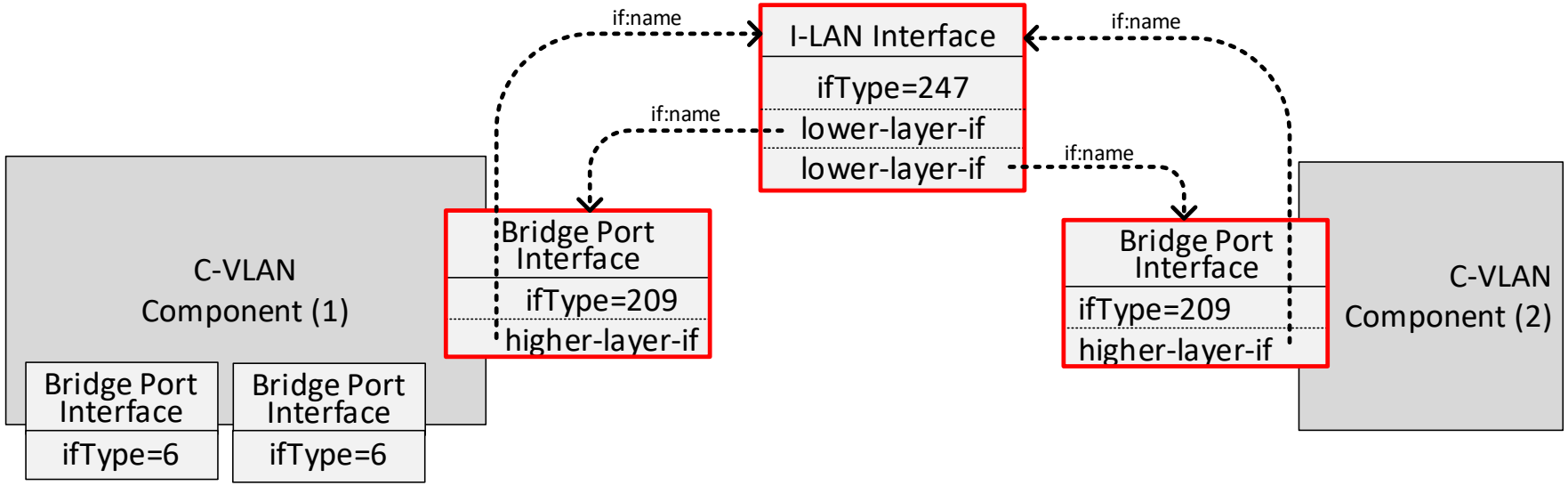
See https://www.ieee802.org/1/files/private/60802-drafts/d1/60802-Steindl-Clause4-0121-v17-redline.pdf:

IA Device end station components make use of IEEE 802.1Q defined mechanisms e.g.,

- traffic queues,
- gate control,
- transmission selection.

➢ The 802.1Q Bridge management model has to be applied to IA Device end station components!

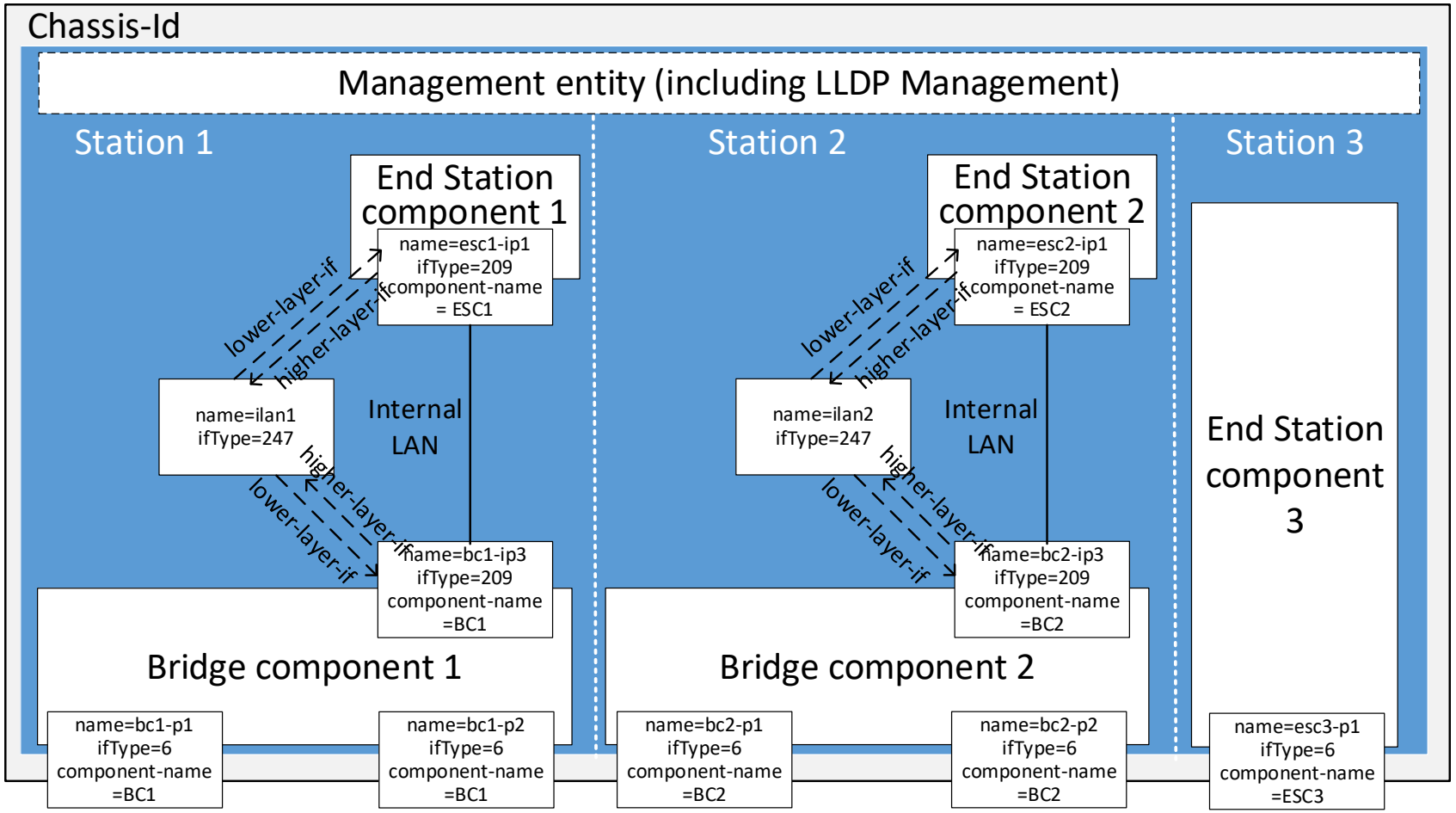
IEEE 802.1Q - Internal LAN management



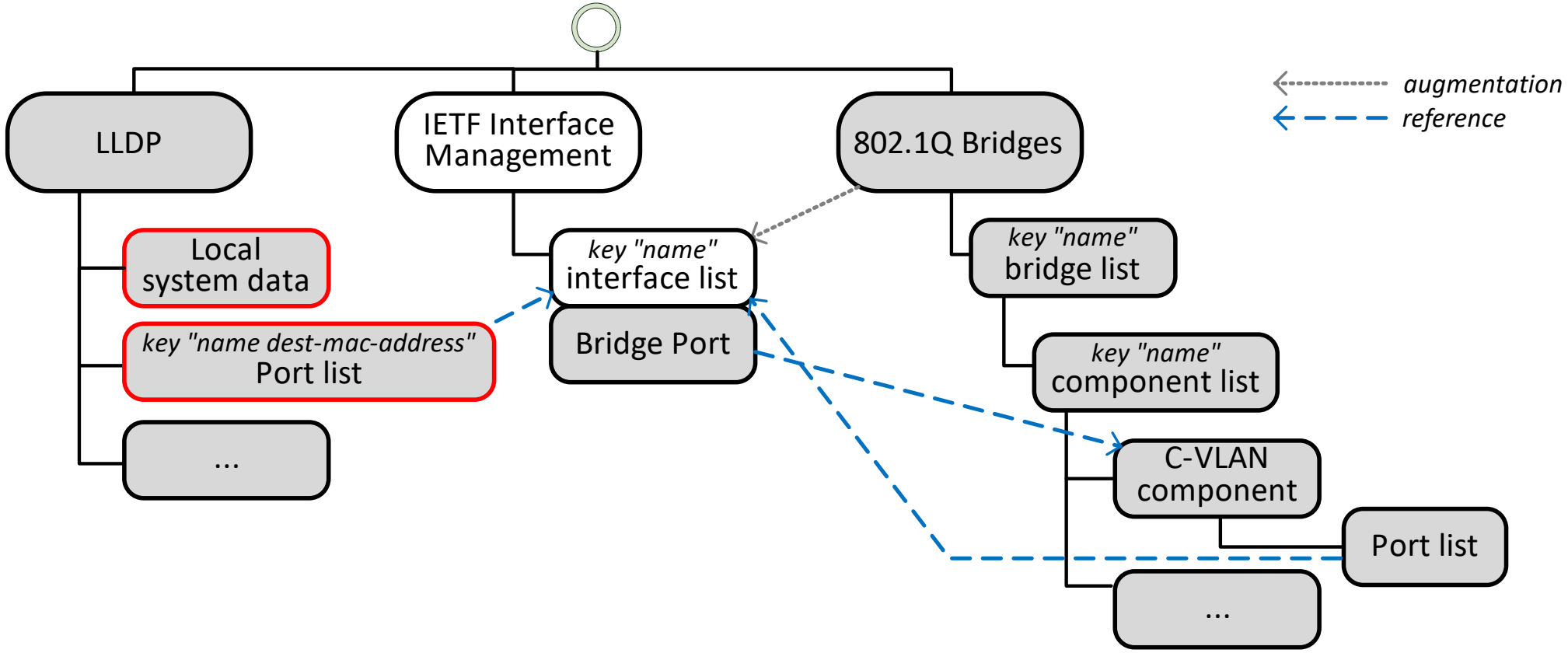
- Internal Ports are Bridge Port Interfaces of ifType 209 *(Transparent bridge interface)*
- I-LAN Interfaces of ifType 247 *(Internal LAN on a bridge interface)* describe the connectivity between the Bridge Port Interfaces

Note: External Ports are Bridge Port Interfaces of ifType 6 *(ethernetCsmacd)*

Example IA Device with IEEE 802.1Q Model for internal connectivity

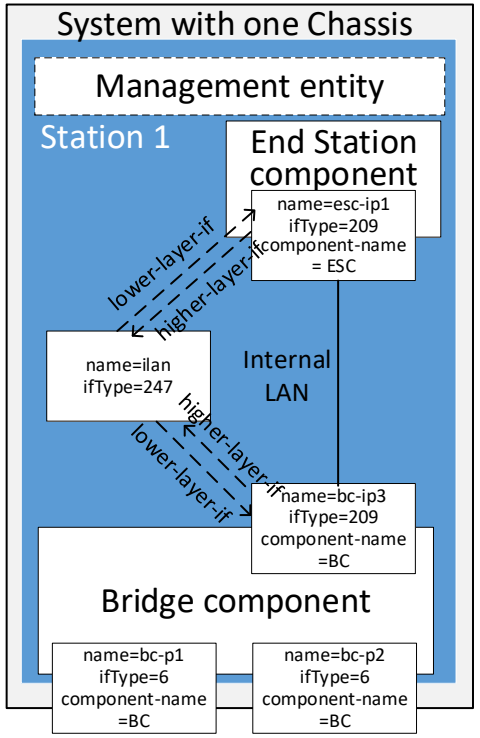


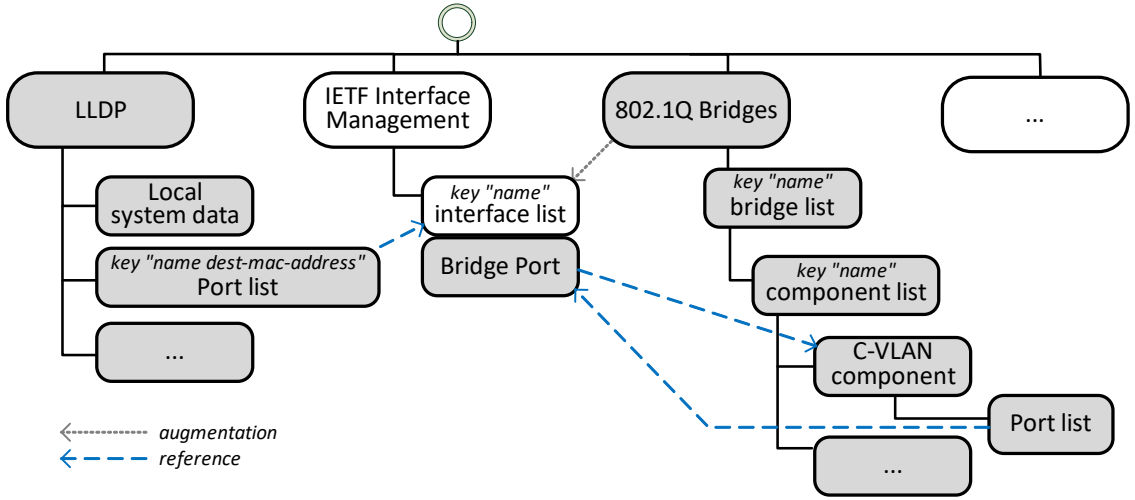
Device Discovery: IEEE 802.1AB (LLDP) - YANG



- LLDP Port list includes the **external** ports of **all components**.

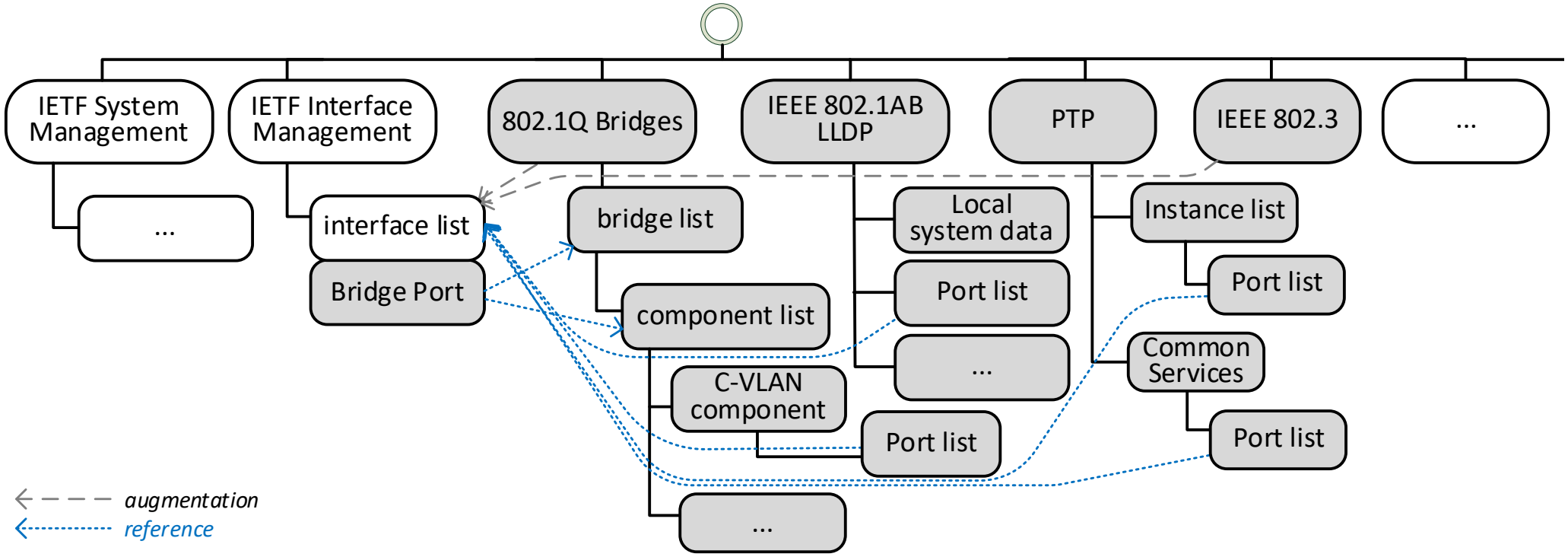
Case study: bridged end station





- 802.1Q bridge list includes **one entry** (Station 1).
- Station 1 Component list includes **two C-VLAN components** (End Station, Bridge).
- Bridge component Port list with **three ports** (bc-p1, bc-p2, bc-ip3).
- End station component Port list with **one port** (esc-ip1).
- **ILAN interface** list entry with internal port connectivity information (`lower-layer-if` references).
- LLDP Port list with **two ports** (bc-p1 and bc-p2).

Generic YANG Framework for IA Devices



Conclusion

End stations and bridges, even multiple instances in one housing, can be managed by using the existing YANG models.

Thus, a „bridged end station“ is just an end station component and a bridge component in one housing.