

Consideration of Architecture Diagrams for Source Flow Control

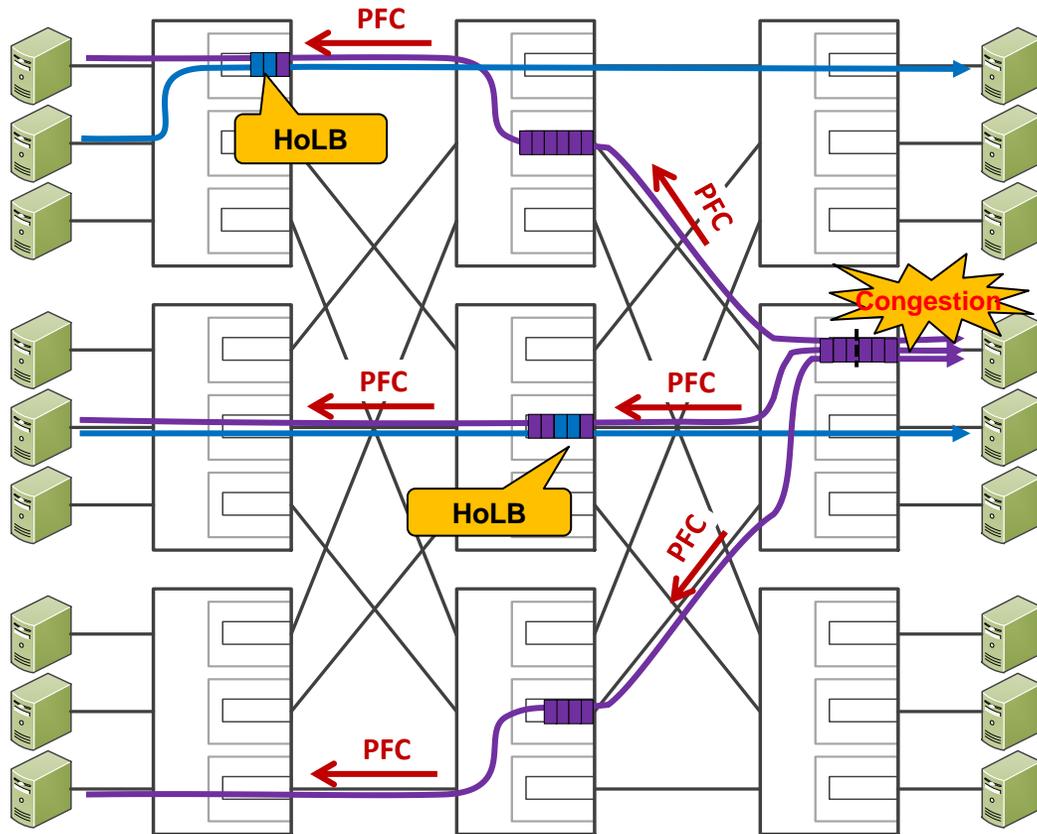
Paul Congdon

Agenda

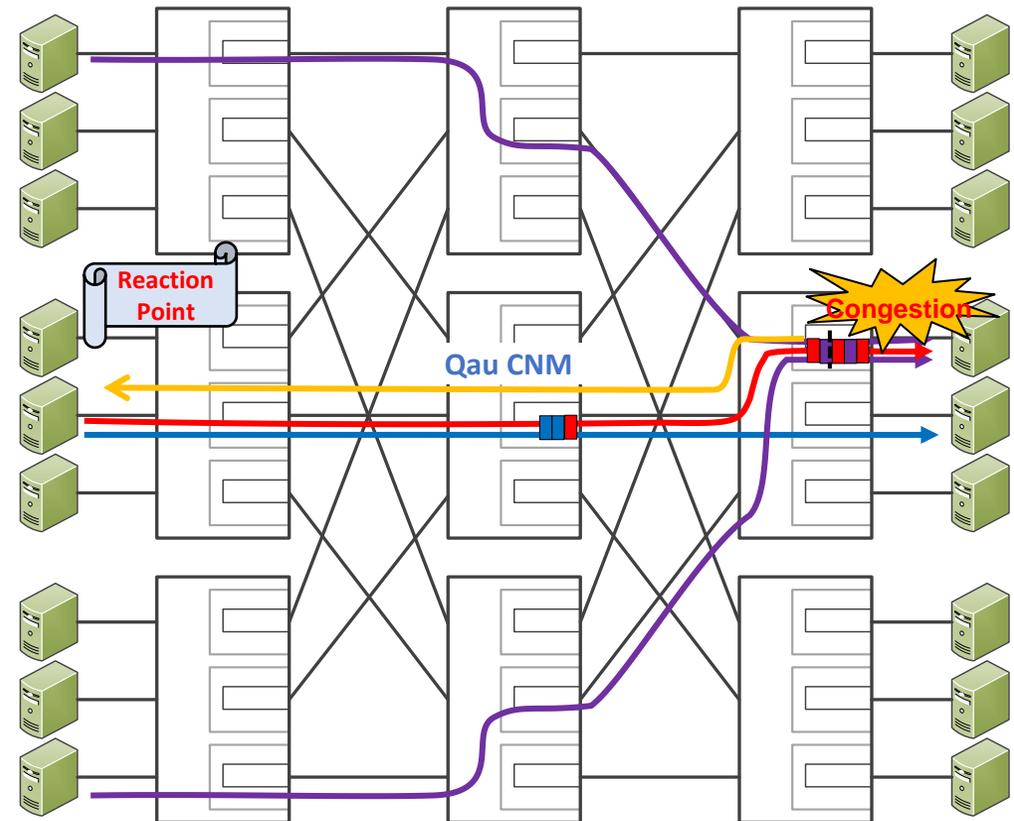
- Background
- Existing Diagrams from 802.1Q
- Proposed Diagrams for 802.1Qdw

Existing 802.1 Congestion Management Tools

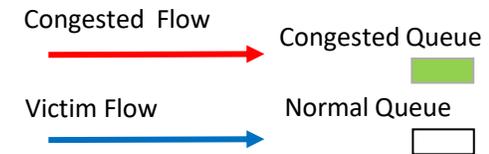
802.1Qbb - Priority-based Flow Control



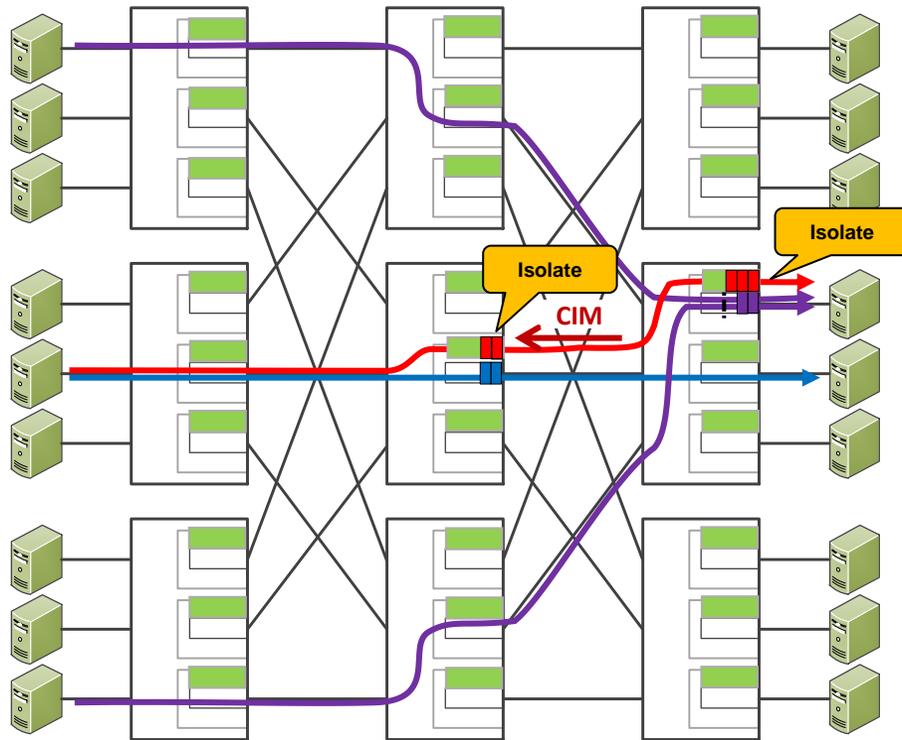
802.1Qau - Congestion Notification



Future 802.1 Congestion Management Tools



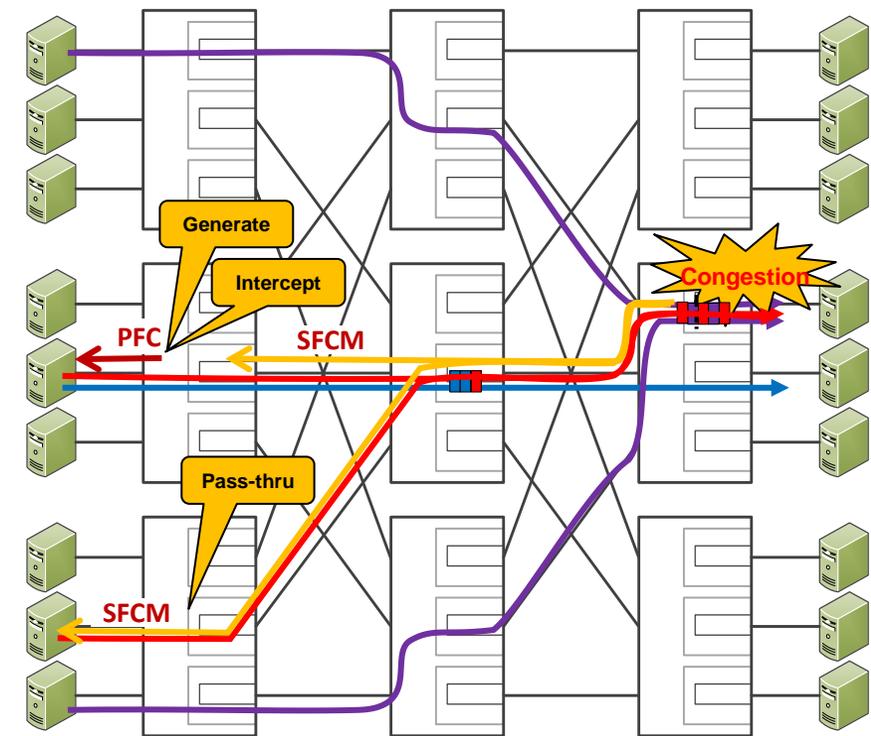
P802.1Qcz - Congestion Isolation



Implementation details

- Congesting flows are isolated locally first
- As queues continue to congest, CIM is generated and sent to upstream bridge/router
- CIM can be L2 or L3 message to support L3 networks (common deployment model).

P802.1Qdw - Source Flow Control



Details

- Can be combined with Congestion Isolation
- If congestion persists, Edge-to-Source signaling using L3 message
- Somewhat like a L3 version of 802.1Qau (L3-QCN), but no Reaction Point (RP) rate controller defined – instead, this is Flow Control
- Optional source Top-of-Rack switch involvement

High Level Concepts about Qdw

- SFCMs are sent back towards the source
 - Similar to CNMs from P802.1Qau – Congestion Notification
 - Layer 3 messages instead of Layer 2 messages
- SFCMs invoke PFC-link ‘Flow Control’
 - Basic implementation uses PFC, does not require a P802.1Qau – Congestion Notification Reaction Point (RP)
 - Alternative implementations may include a flow-based RP
- SFC does not require per-flow state
 - Unlike Congestion Isolation that remembers ‘congesting flows’
- So... SFC architectural integration could look like...
 - PFC when receiving an SFCM
 - Congestion Notification when transmitting an SFCM

PFC Architecture Diagram

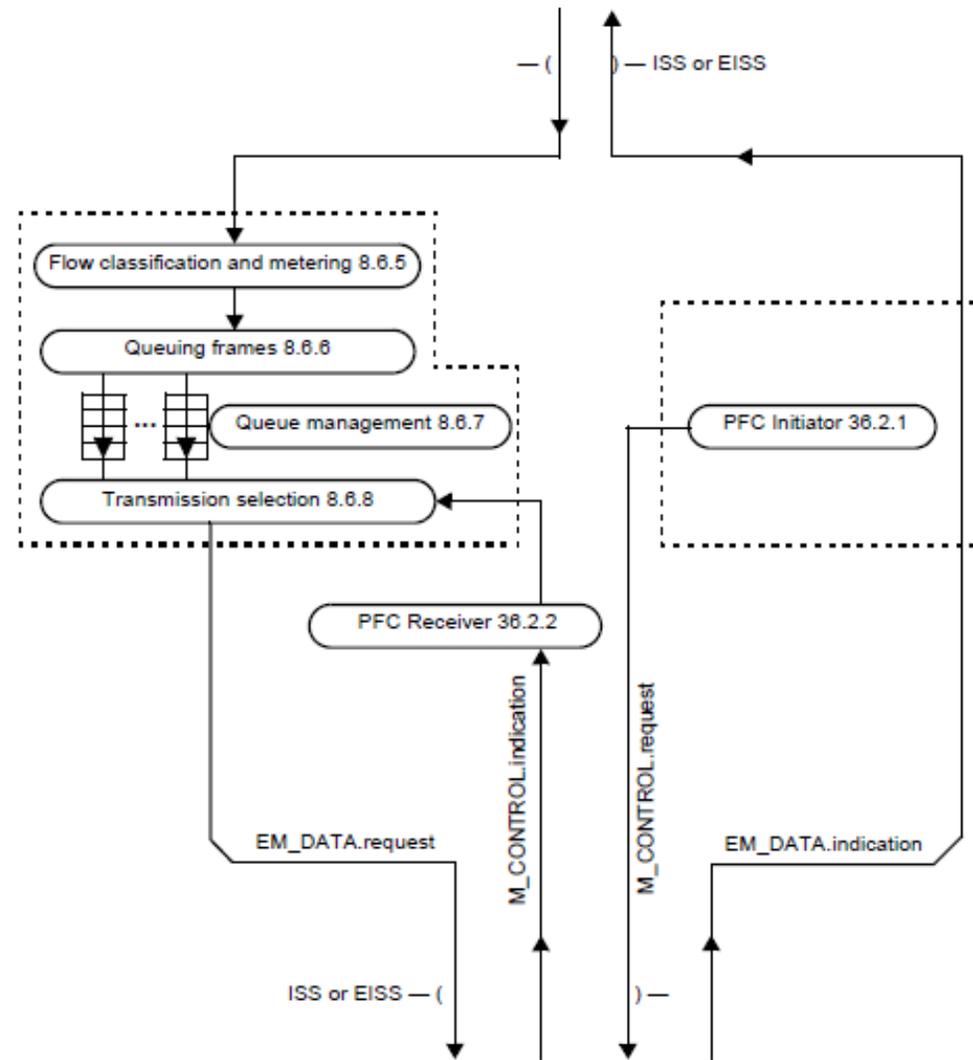


Figure 36-3—PFC-aware system queue functions

Congestion Notification Bridge Architecture Diagram

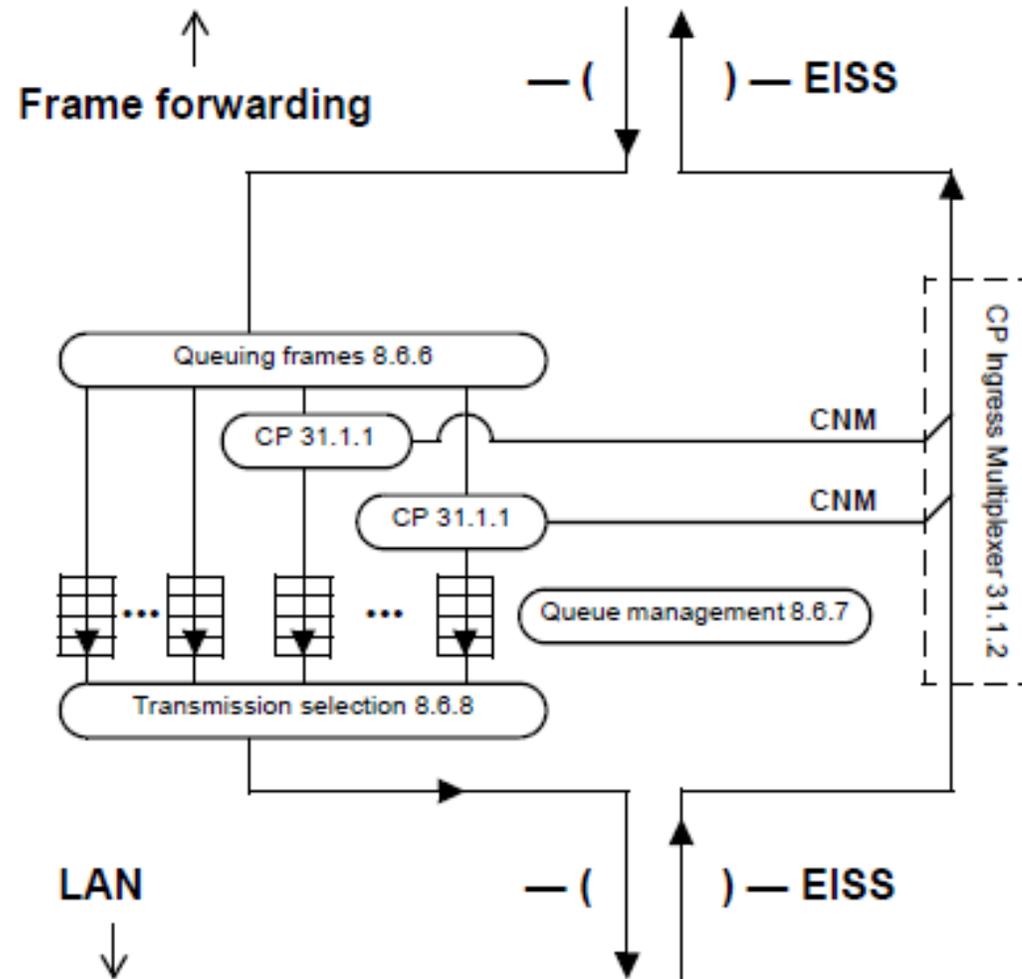


Figure 31-1—CPs and congestion-aware queues in a Bridge

Congestion Notification End-Station Architecture Diagram

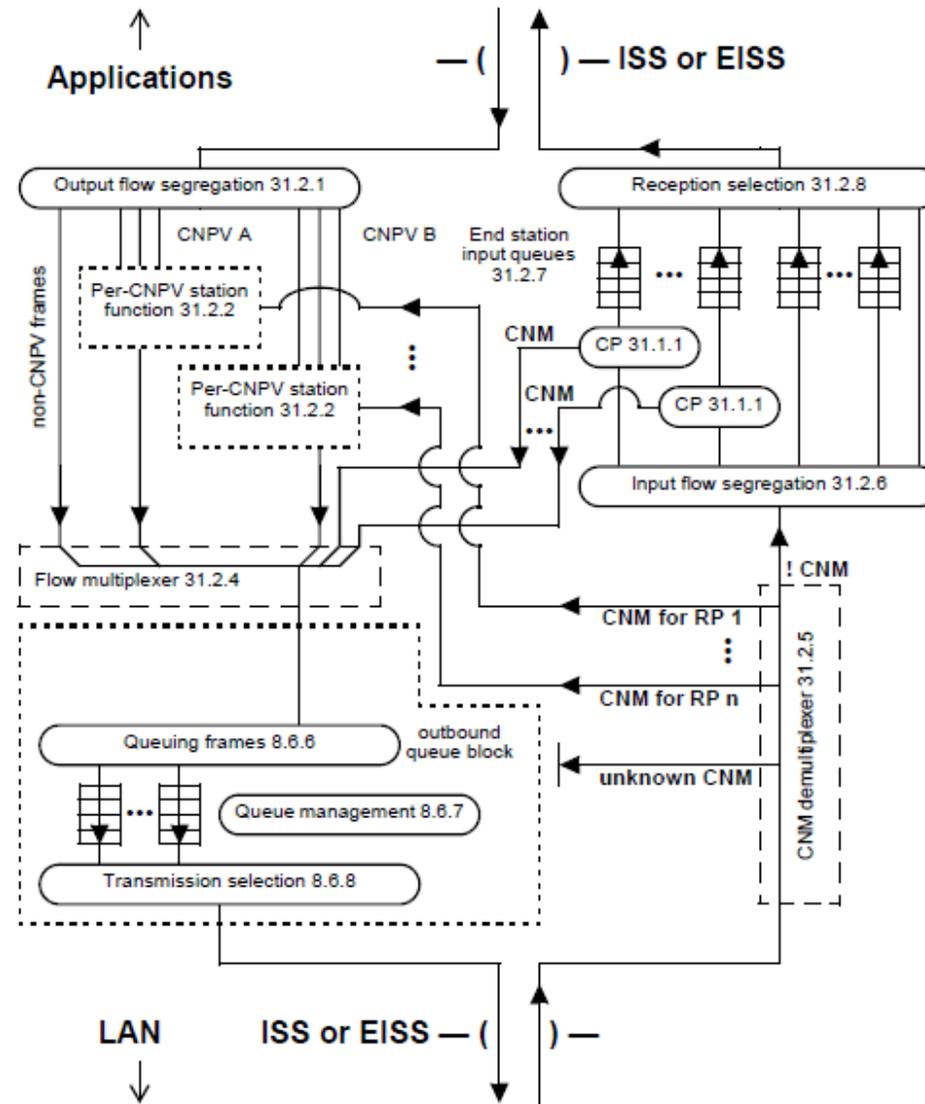
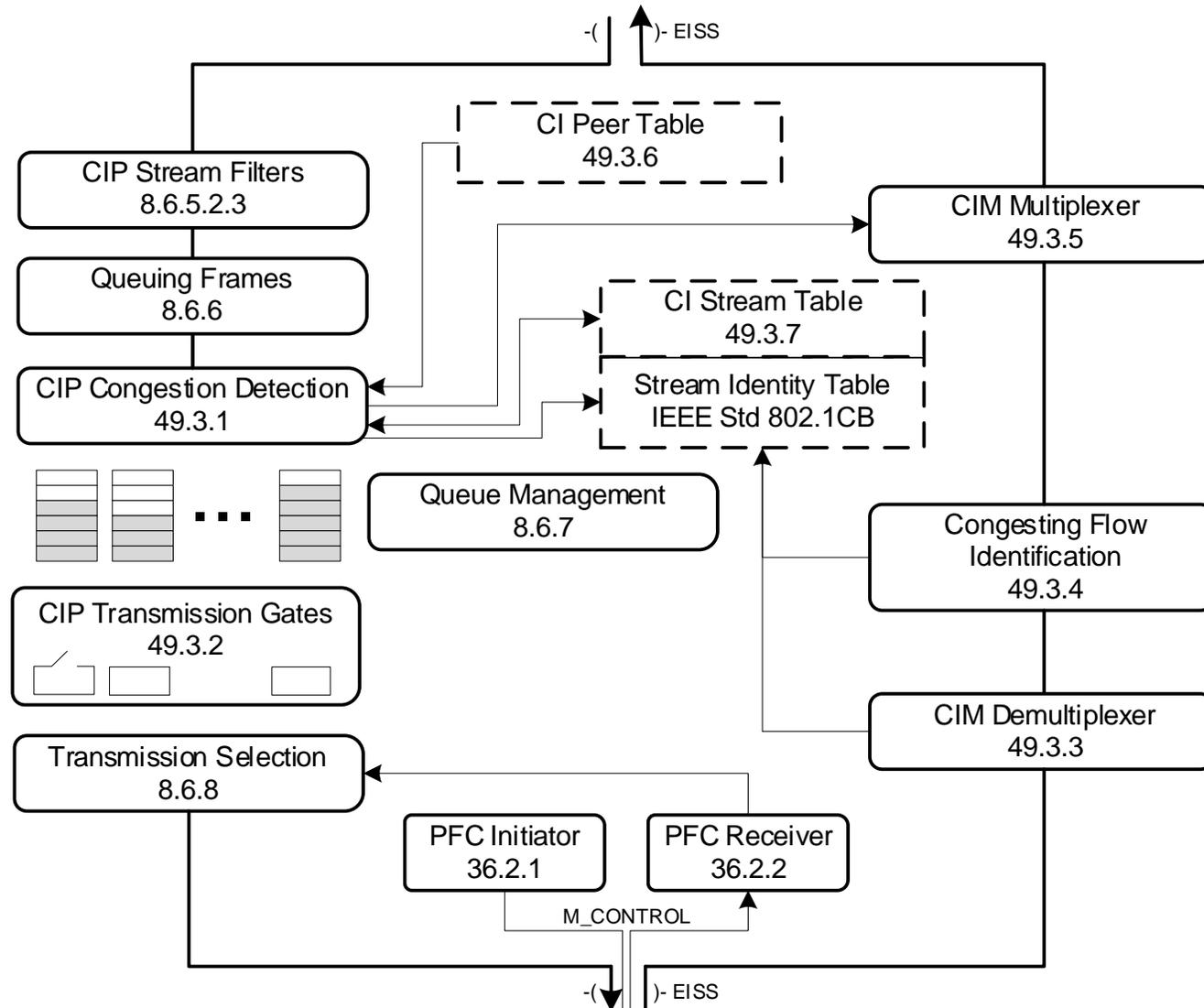
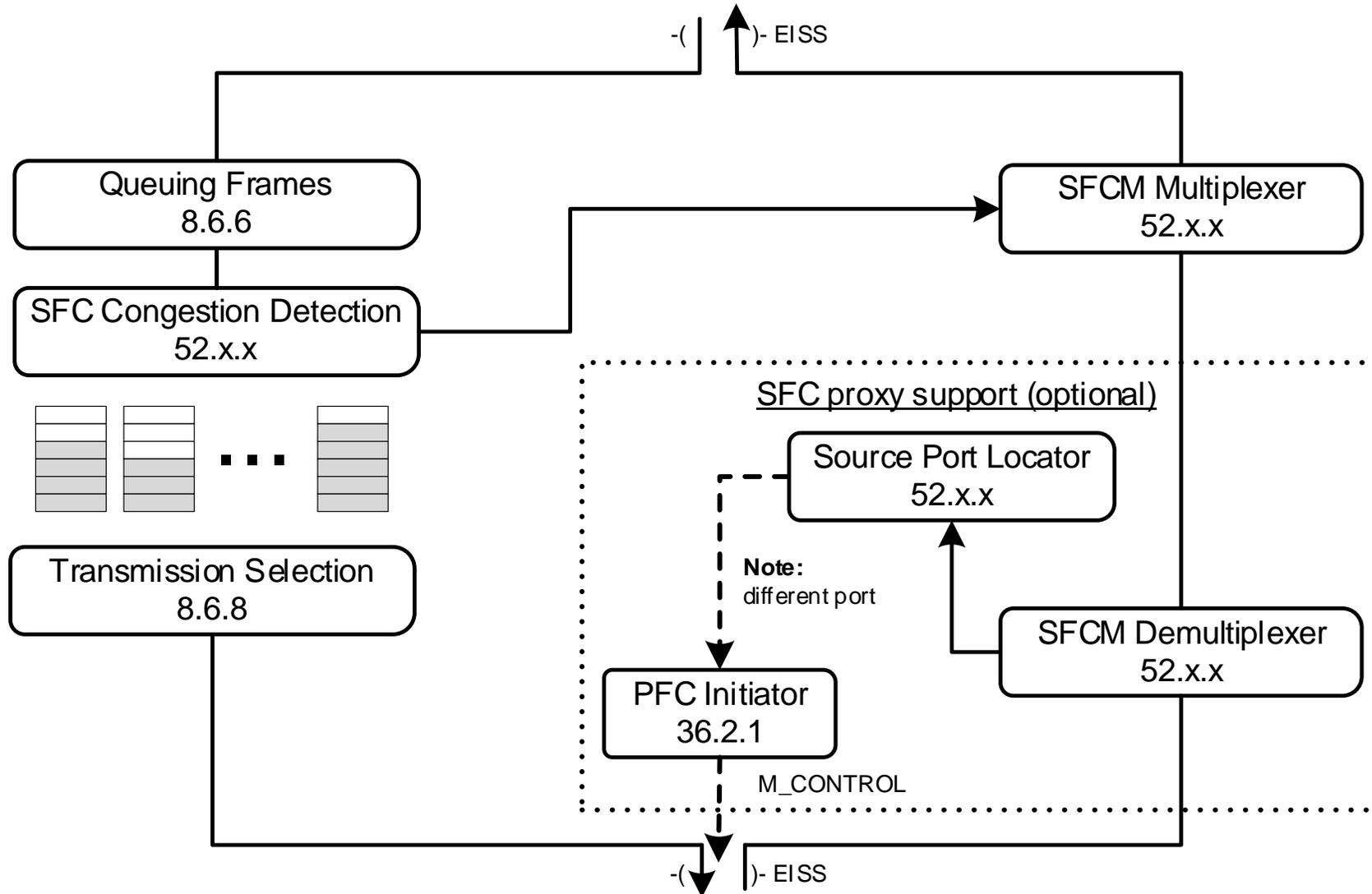


Figure 31-2—Congestion-aware queue functions in an end station

Congestion Isolation Bridge Architecture Diagram



Proposed SFC Bridge Architecture Diagram



Proposed SFC End-Station Architecture Diagram

