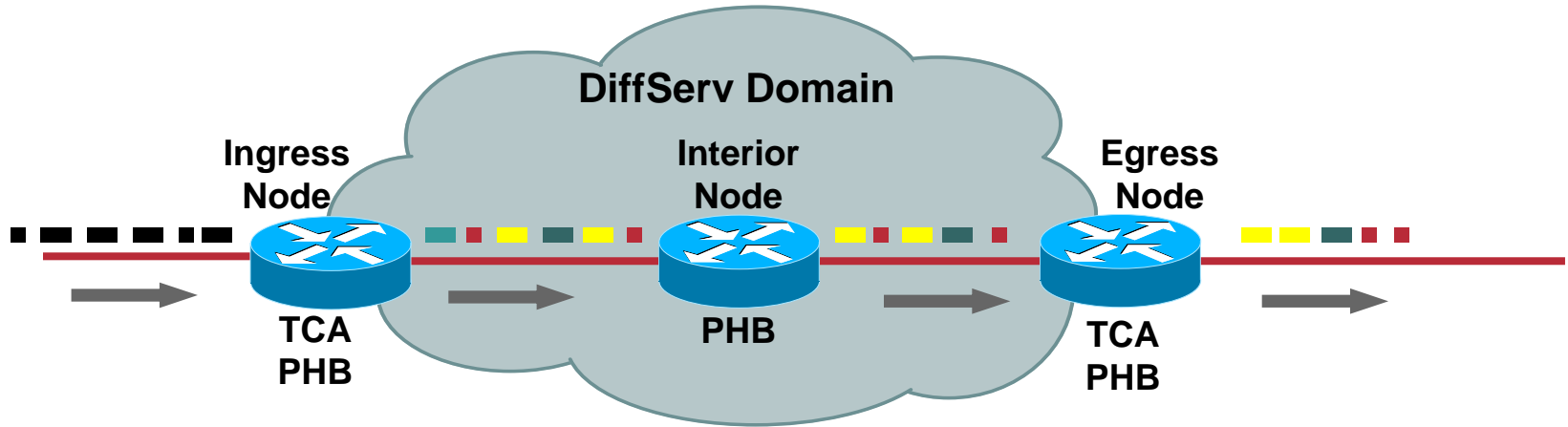


MPLS QoS Architectures

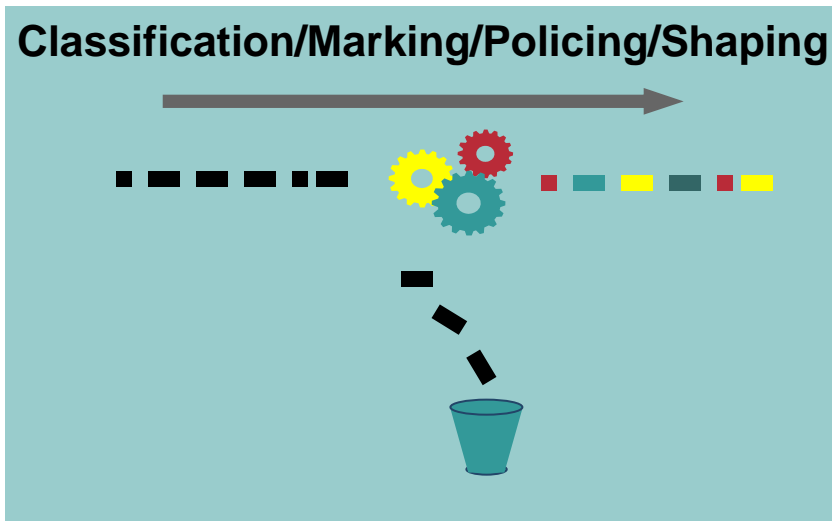
- MPLS does **NOT** define new QoS architectures
- MPLS QoS uses Differentiated Services (DiffServ) architecture defined for IP QoS
- DiffServ architecture defined in RFC2475
- MPLS support for DiffServ defined in RFC3270

Differentiated Services Architecture



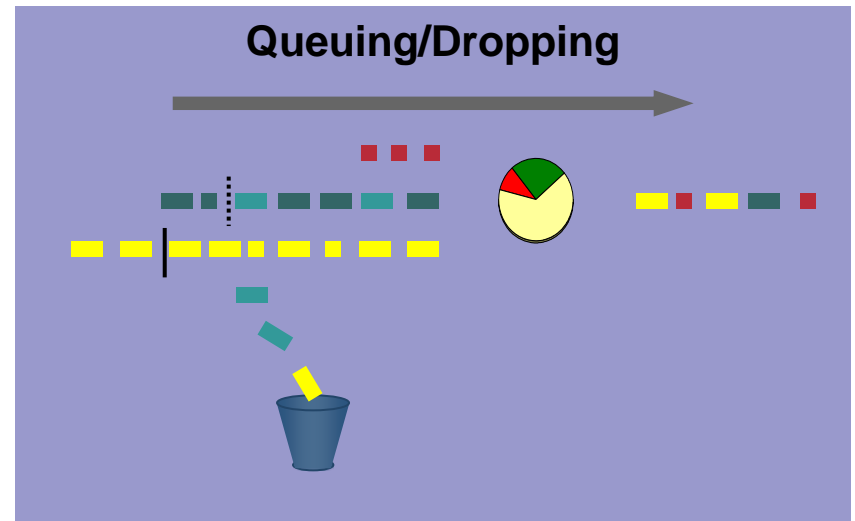
Traffic Conditioning Agreement (TCA)

Classification/Marking/Policing/Shaping



Per-Hop Behavior (PHB)

Queuing/Dropping



What's Unchanged in MPLS Support of DiffServ

- **Functional components (TCA/PHB) and where they are used**

Classification, marking, policing, and shaping at network boundaries

Buffer management and packet scheduling mechanisms used to implement PHB

- **PHB definitions**

Expedited Forwarding (EF): low delay/jitter/loss

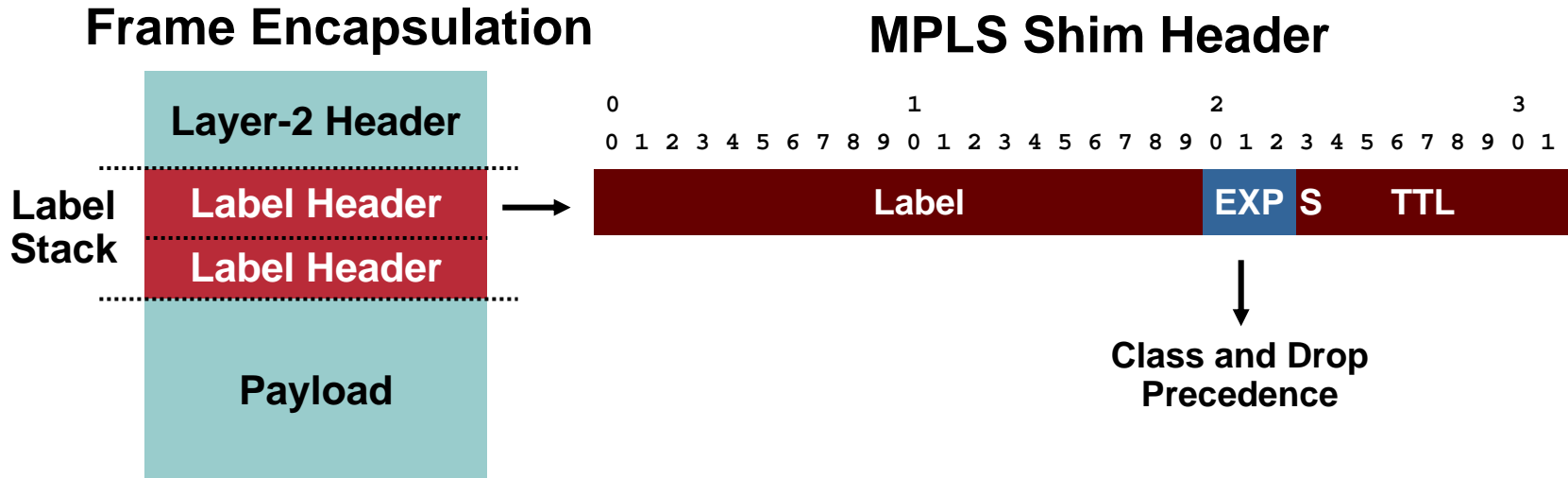
Assured Forwarding (AF): low loss

Default (DF): No guarantees (best effort)

What's New in MPLS Support of DiffServ

- **How aggregate packet classification is conveyed (E-LSP vs. L-LSP)**
- **Interaction between MPLS DiffServ info and encapsulated DiffServ info (e.g. IP DSCP)**

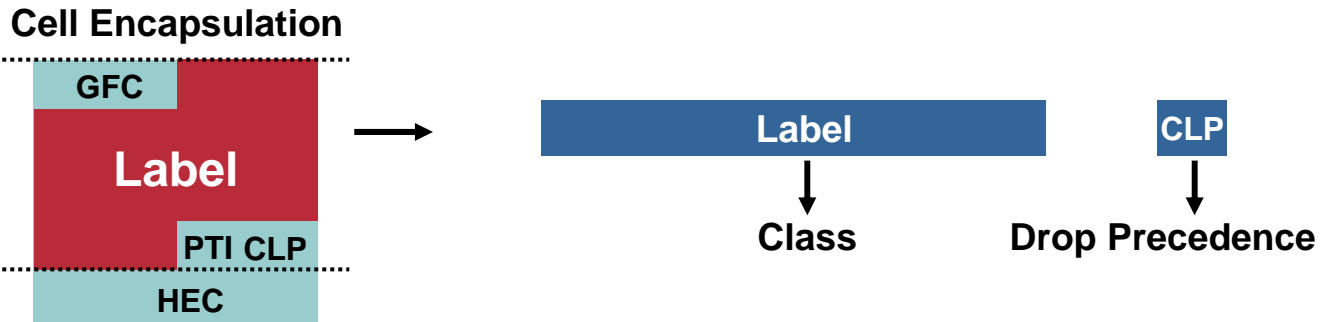
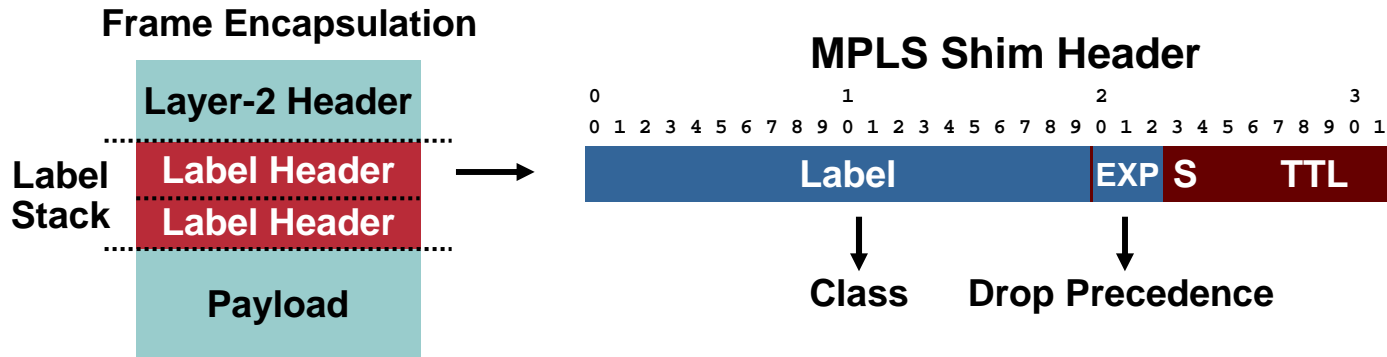
EXP-Inferred-PSC* LSP (E-LSP)



- Packet Class and drop precedence inferred from EXP (3-bit) field
- RFC3270 does not recommend specific EXP values for DiffServ PHB (EF/AF/DF)
- Used for frame-based MPLS

*Per-Hop Behavior Scheduling Class

Label-Only-Inferred-PSC* LSP (L-LSP)



- Packet class inferred from label
- Drop precedence inferred from EXP or ATM CLP
- Can be used for frame-based and cell-based MPLS

*Per-Hop Behavior Scheduling Class

E-LSP vs. L-LSP

- **An E-LSP may carry multiple classes (max eight, in real life less than that)**
- **An L-LSP carries one class**
- **Both E-LSP and L-LSP can use LDP or RSVP for label distribution**
- **Cisco products currently support E-LSP for frame-mode MPLS**
- **No demand for L-LSP support with frame-mode MPLS yet**