

VoIP over MPLS & Voice Services over MPLS

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Voice Services over MPLS Standards

- IETF
 - RFC 3032 (MPLS)
 - draft-ietf-pwe3-requirements-08.txt
 - draft-ietf-pwe3-arch-07.txt

- MPLS and Frame Relay Alliance
 - MPLS Forum 1.0
 - MPLS / Frame Relay Alliance 5.0.0

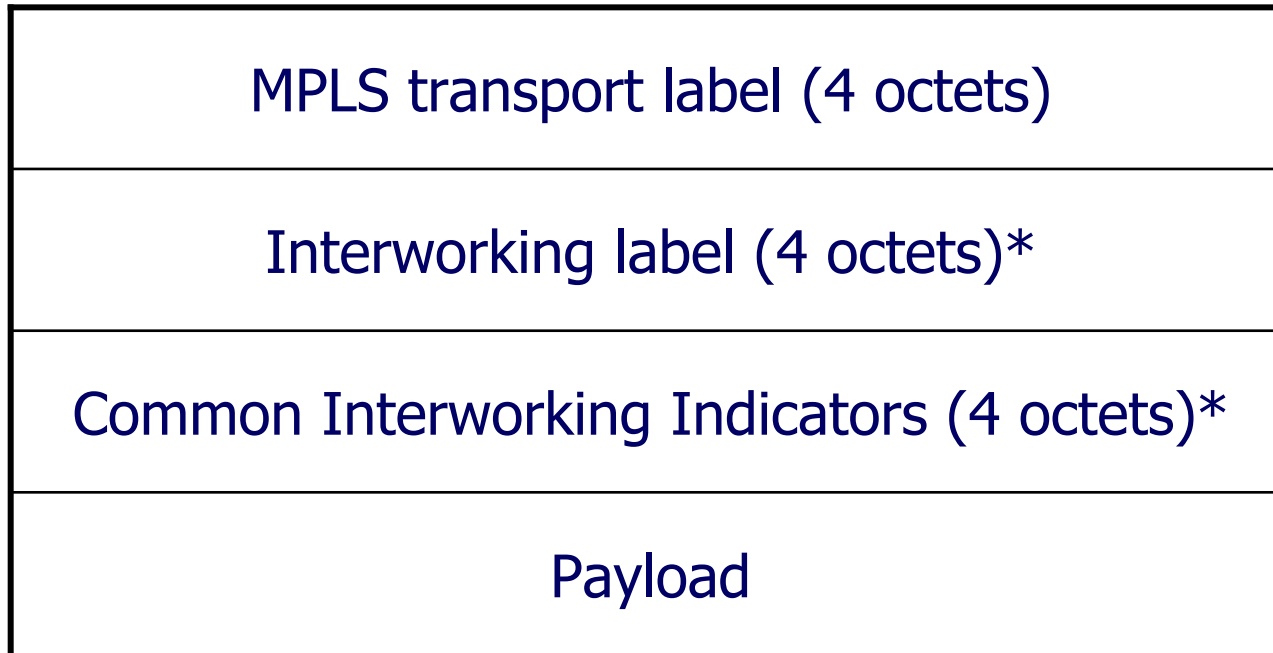
- ITU-T
 - Y.1411 (2003)
 - Y.1414 (2004)

ITU-T: Voice Services over MPLS Objectives

- Align with other standards for MPLS interworking
 - IETF PWE3
 - ITU-T MPLS Network Interworking (Y.1411)
 - MPLS and Frame Relay Alliance
- Efficient interworking with VoIP
- Efficient interworking with deployed ATM networks
- Efficient transport

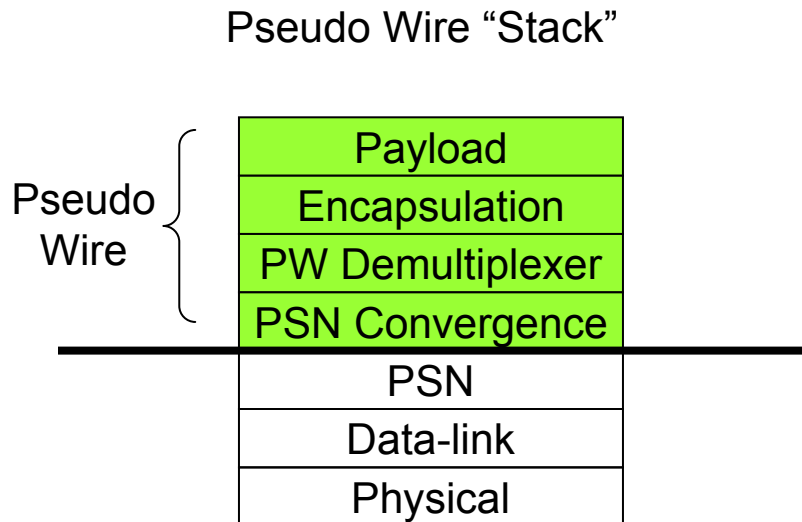
Family of Protocols Specified

MPLS Network Interworking – Functional Grouping



Common Format for MPLS Network Interworking

The Pseudo Wire IETF



PSN Convergence

Maps the Payload in a format acceptable by the Packet Switched Network

Often Referred to as a Tunnel

May be Null

PW Demux

Allows Multiple PW over a single PSN Tunnel

Encapsulation

Carries extra information that is not within the payload itself.

May be Null

Payload

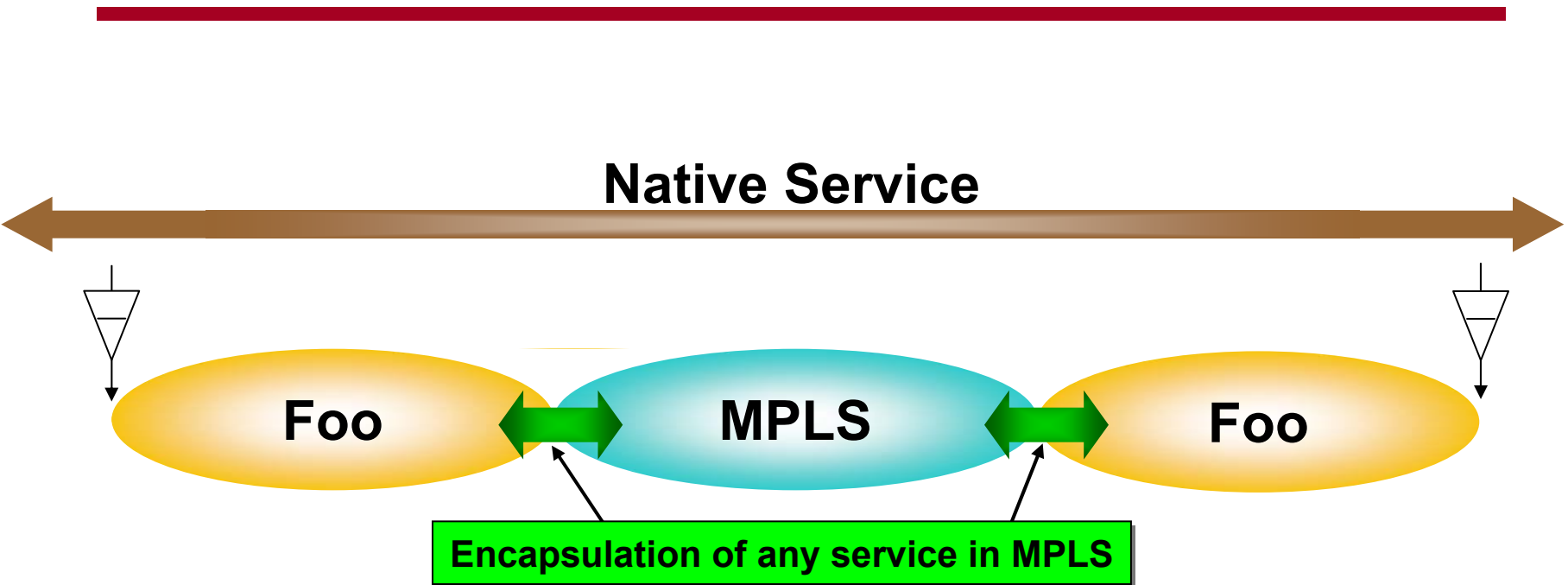
This is a packet typically at the Network or Data link layer

Examples Ethernet, Frame Relay, ATM, SONET Payload, IP

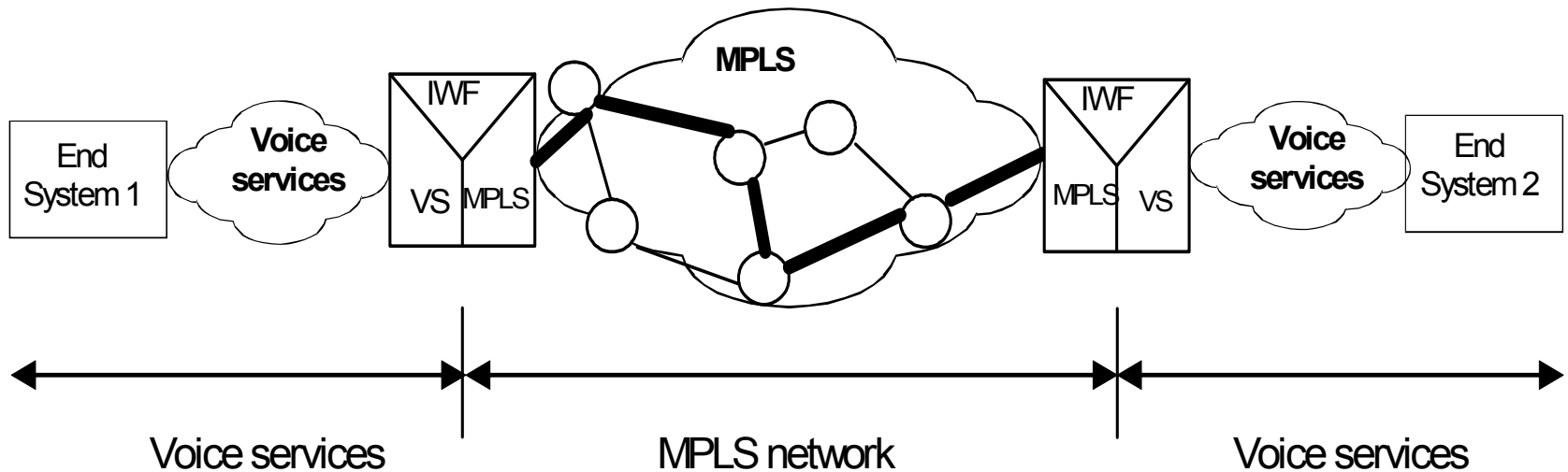
VS-MPLS Network Interworking

- Rec Y.1414 specifies three solutions
 - “Voice over IP over MPLS”
 - alignment with VoIP
 - standard VoIP transported over MPLS
 - “Voice over MPLS using AAL type 2 SSCS for narrowband services”
 - simplified interworking with ATM
 - ATM SSCS PDUs transported over MPLS
 - “Voice over MPLS using MPLS Forum IA 1.0”
 - transport efficiency
 - also based on ATM SSCS PDU

Network Interworking



VS - MPLS Reference Architecture



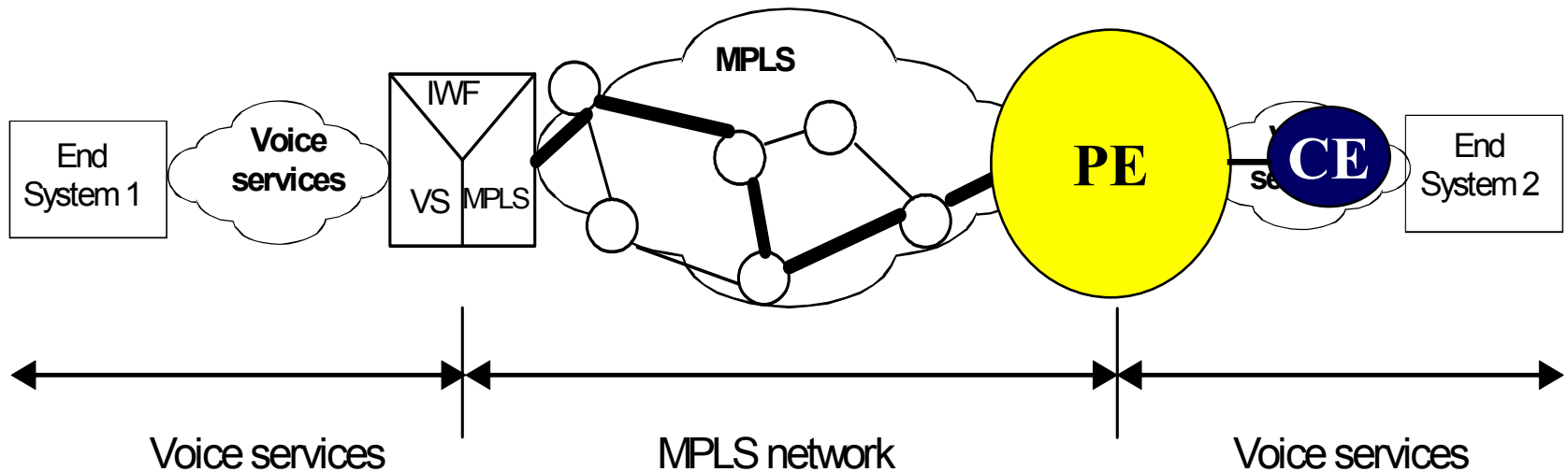
LSR = Label Switched Router



LSP = Label Switched Path

VS = Voice Services

VS - MPLS Reference Architecture



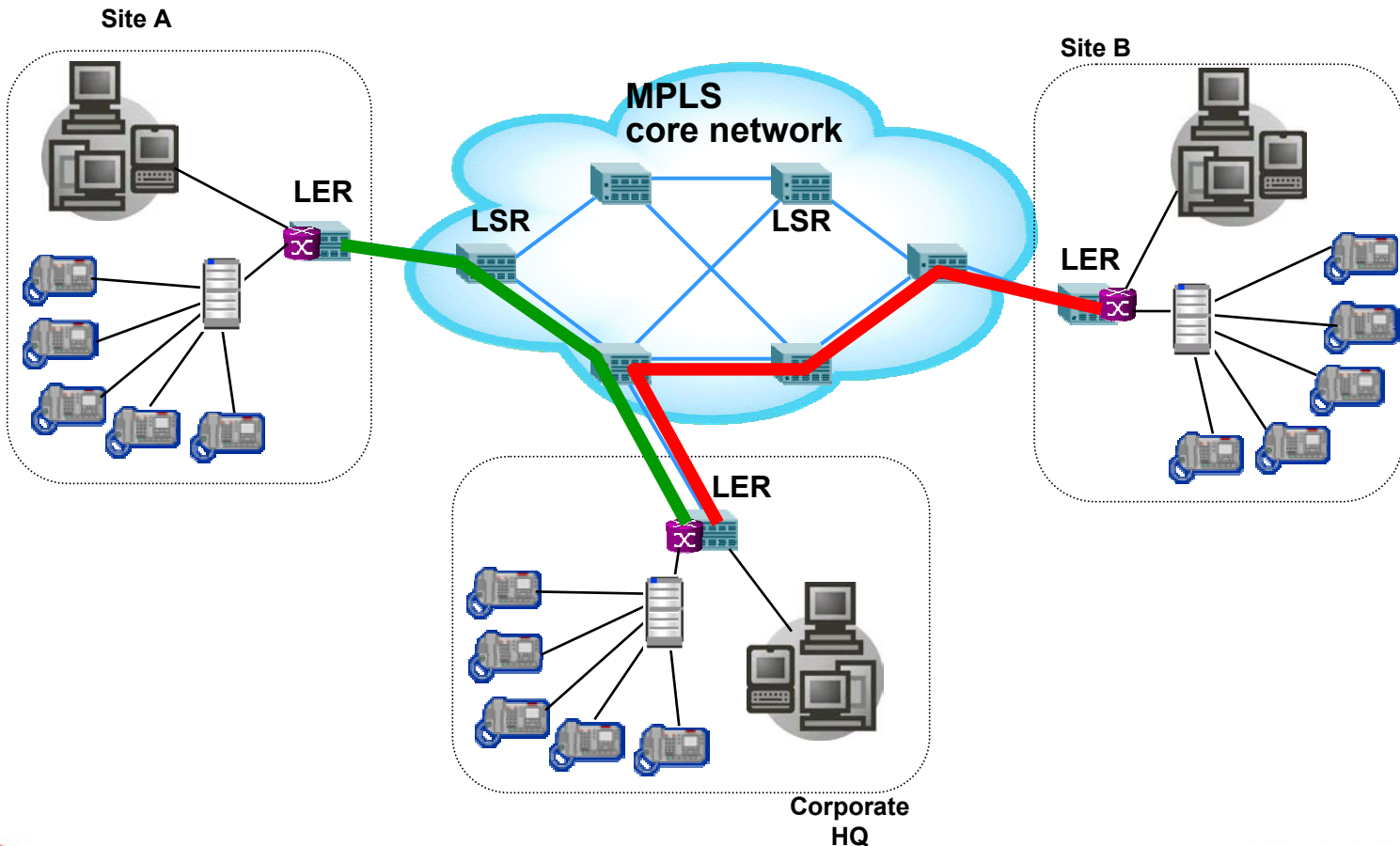
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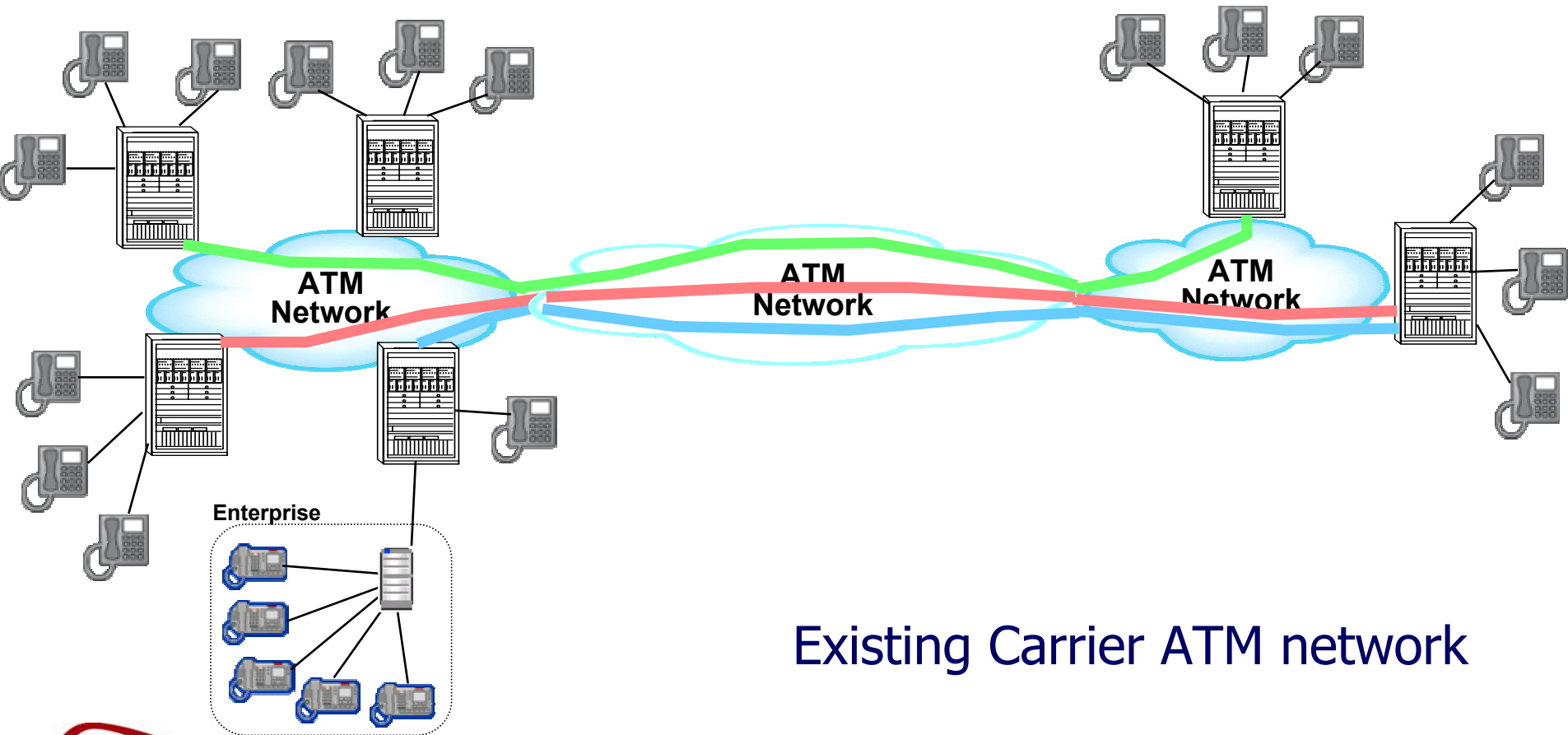
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VS-MPLS Deployment: Enterprise

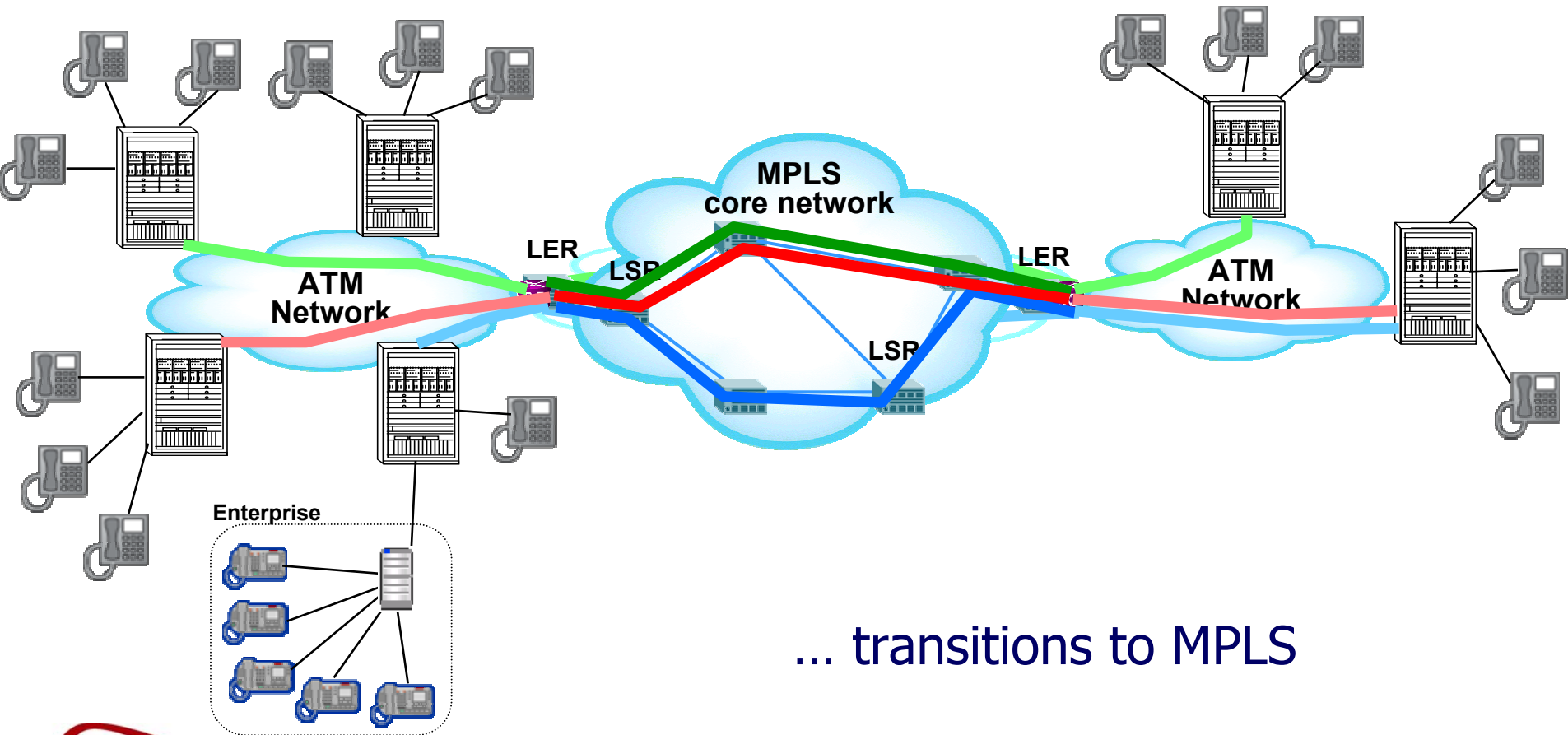


VS-MPLS Deployment: Carrier



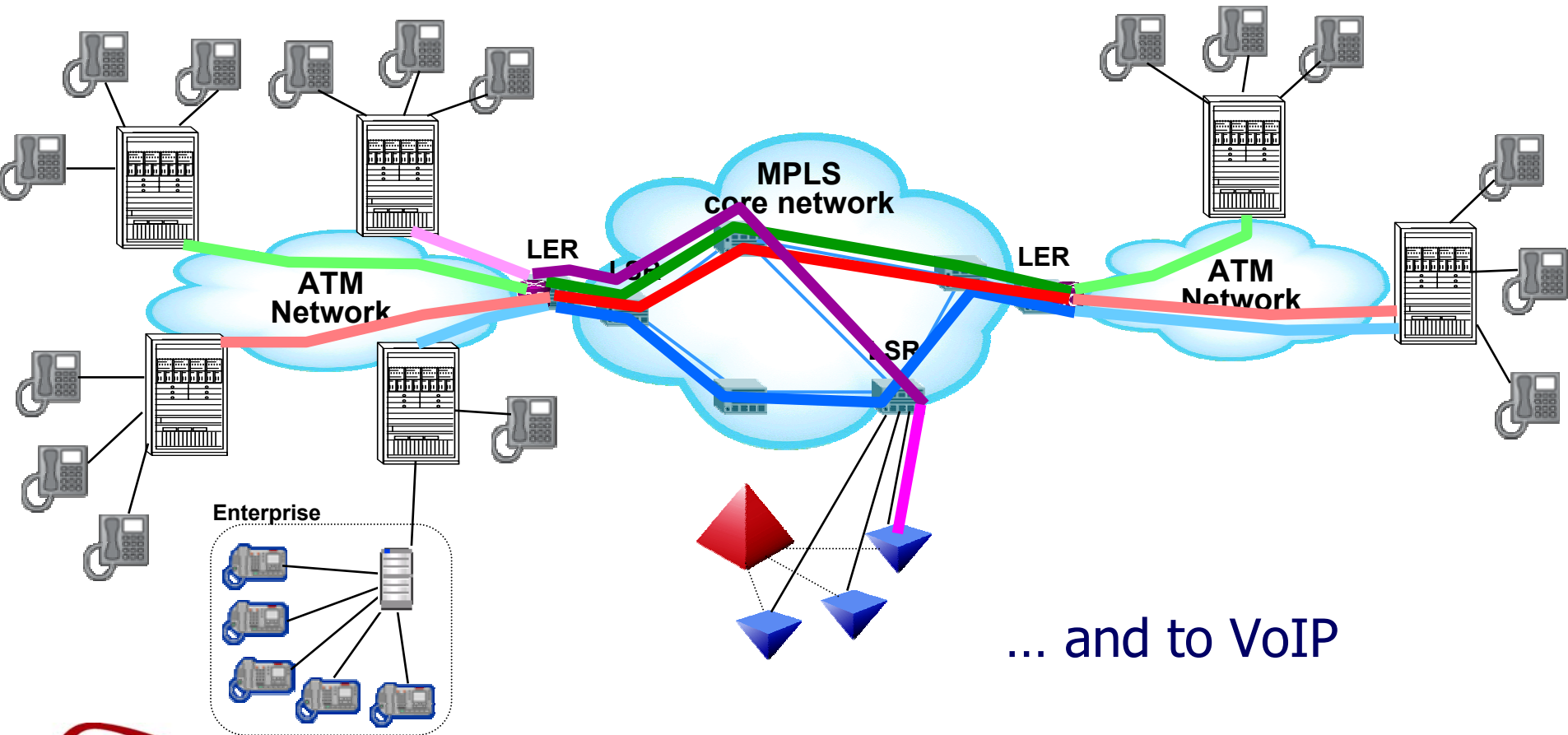
Existing Carrier ATM network

VS-MPLS Deployment: Carrier



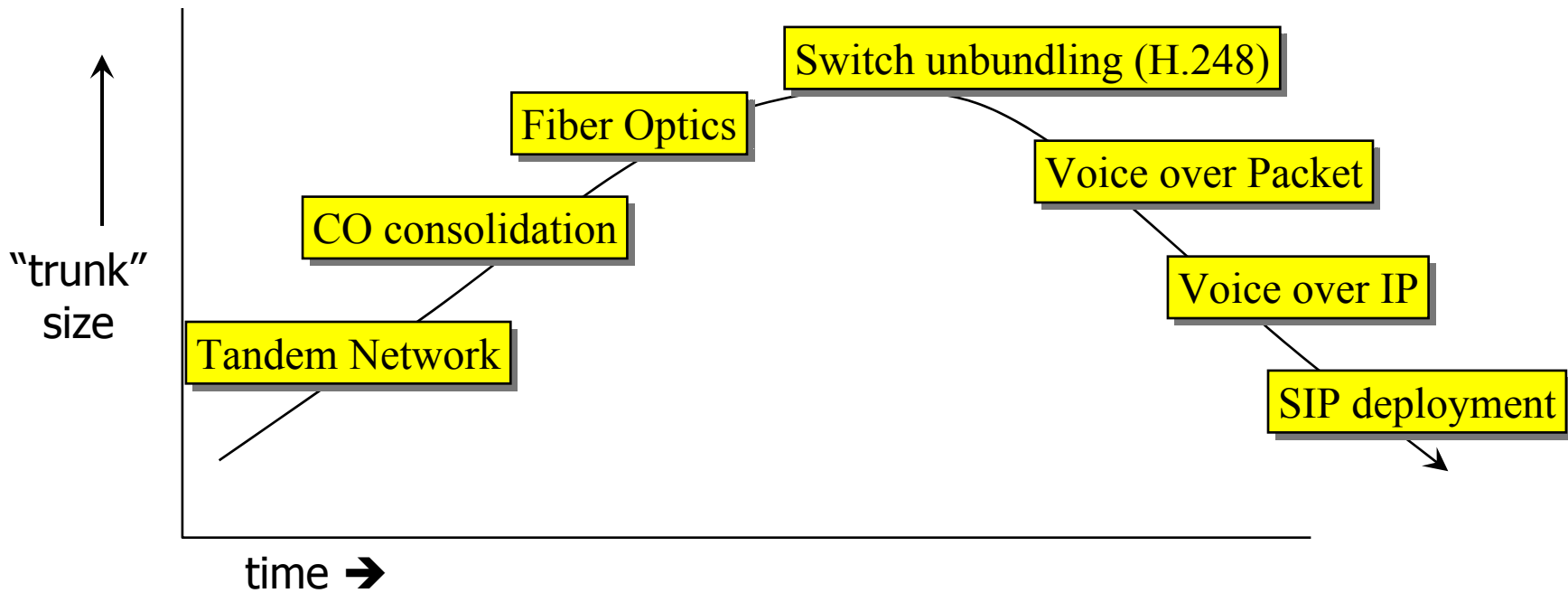
... transitions to MPLS

VS-MPLS Deployment: Carrier



... and to VoIP

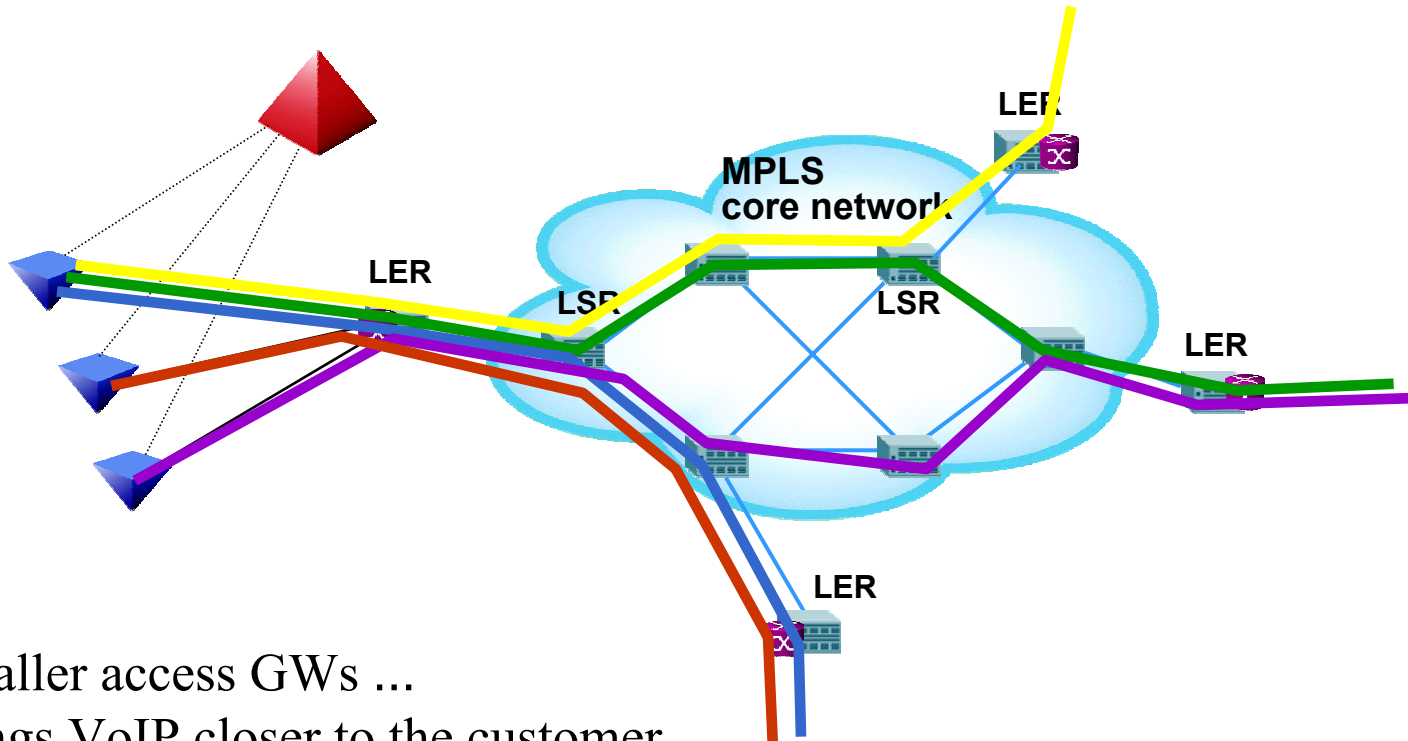
VS-MPLS Deployment: VoIP



SIP is making the concept of large "trunk groups" irrelevant...

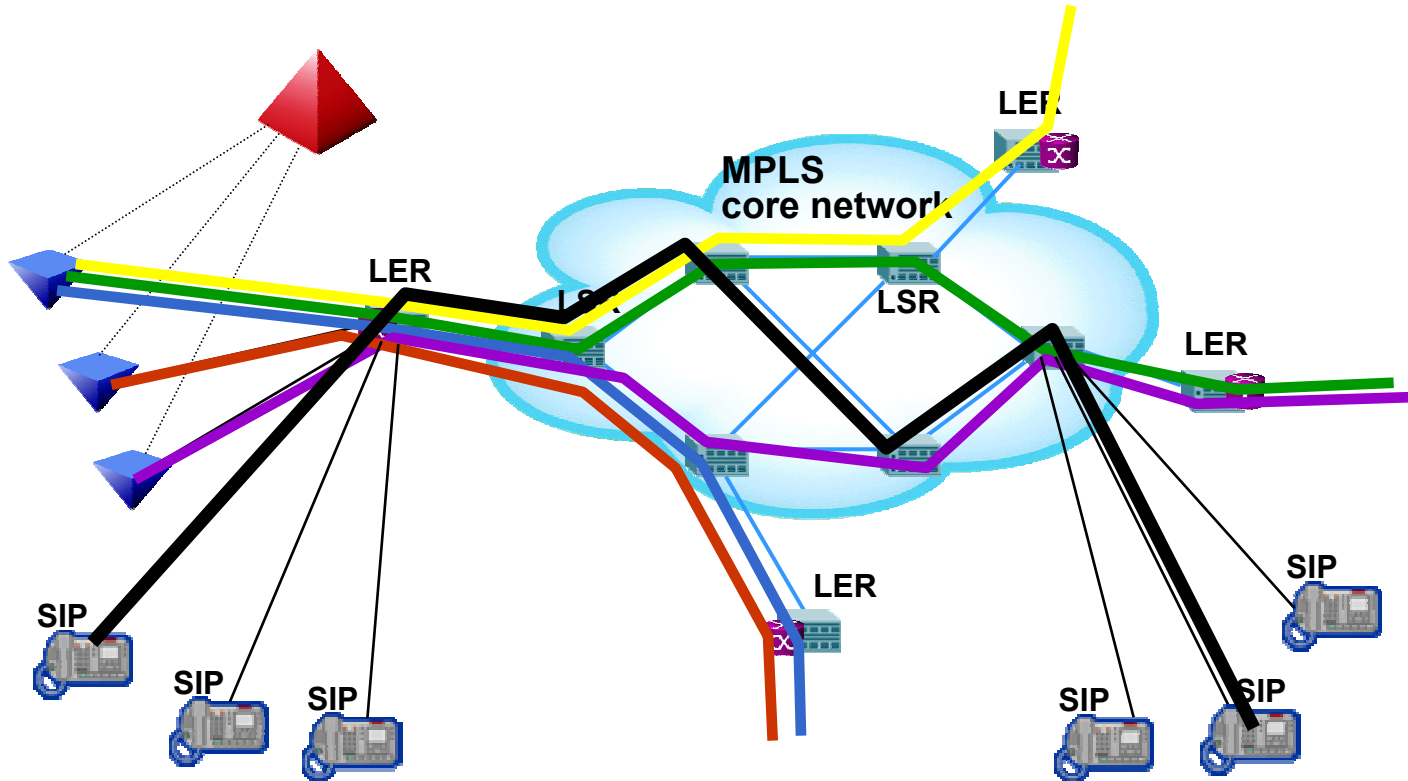
➔ Voice over IP over MPLS

VS-MPLS Deployment: VoIP



Smaller access GWs ...
brings VoIP closer to the customer ...
and aligns well with the Voice over IP over MPLS standard.

VS-MPLS Deployment: VoIP



deployment of SIP phones will accelerate trend

Conclusions

- Voice Services over MPLS network interworking standards complete
- Consistency between standards organizations
- Family of protocols to satisfy requirements
 - interworking with deployed ATM
 - enterprise networks
 - alignment with VoIP & SIP
- VoIP over MPLS will become increasingly important