Private Line Emulation Update

draft-ietf-pals-ple

draft-schmutzer-pals-ple-signaling

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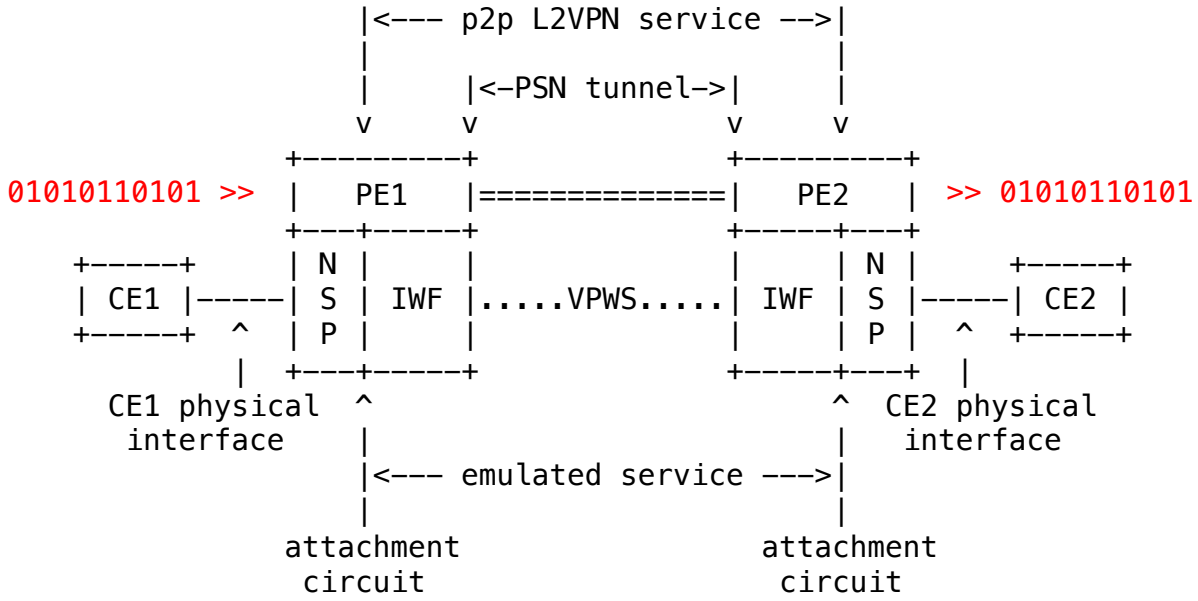
IETF118 Prague, MPLS WG (no dedicated PALS session)

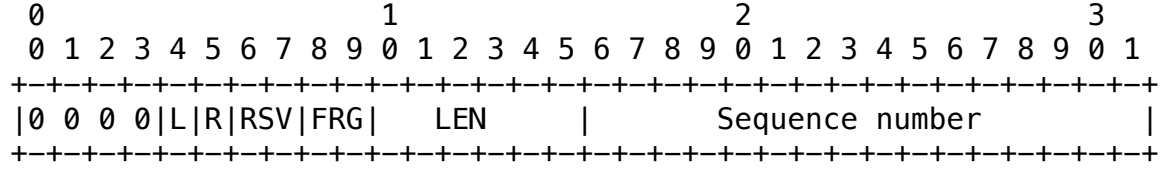
draft-ietf-pals-ple-01

- Emulated services
  - Ethernet
  - SONET/SDH
  - Fibre Channel
  - OTN
- Bit-stream encapsulations
  - Basic payload
  - Byte-aligned payload
- Control word
  - Sequencing
  - Client layer signal failure (L bit)
  - Server layer backward failure (R bit)
- Differential clock recovery

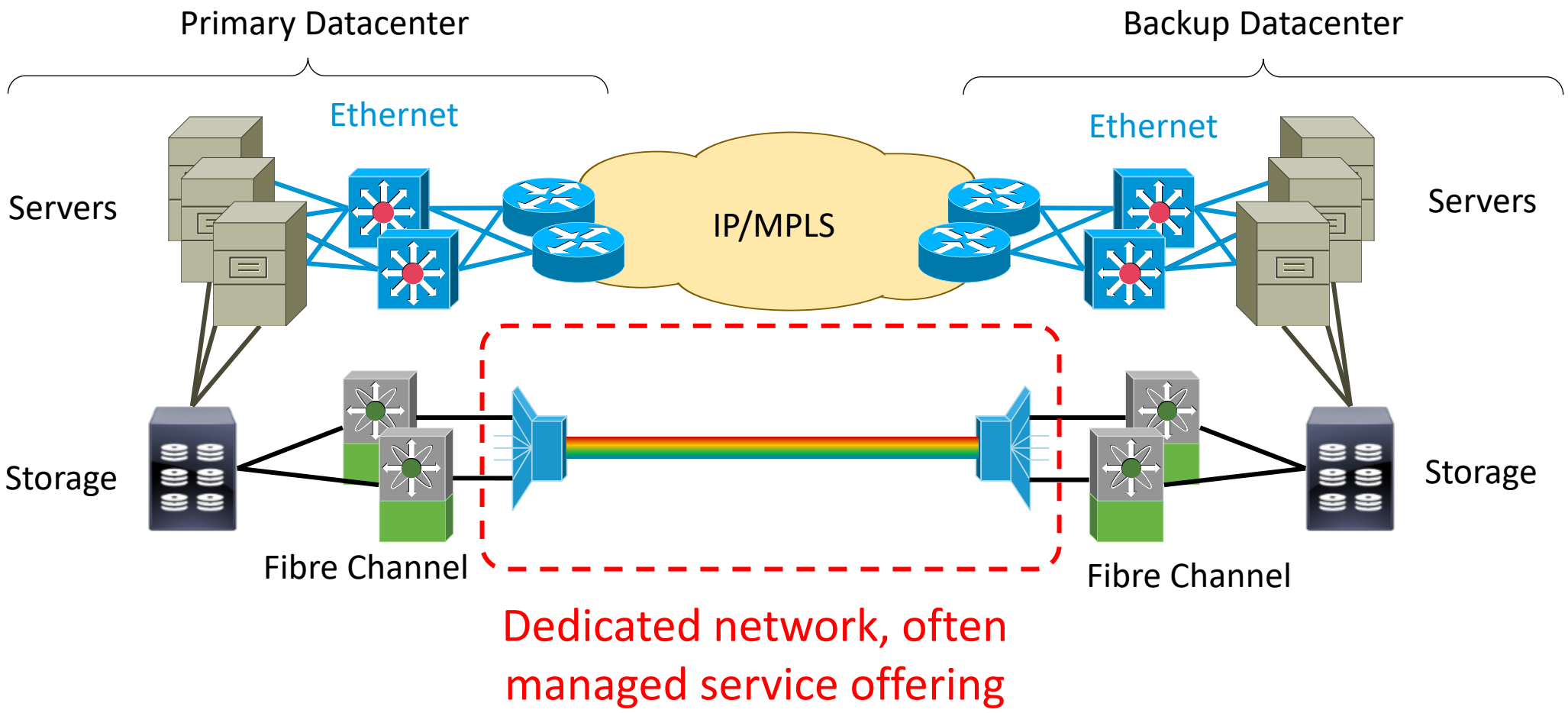
Reference Model



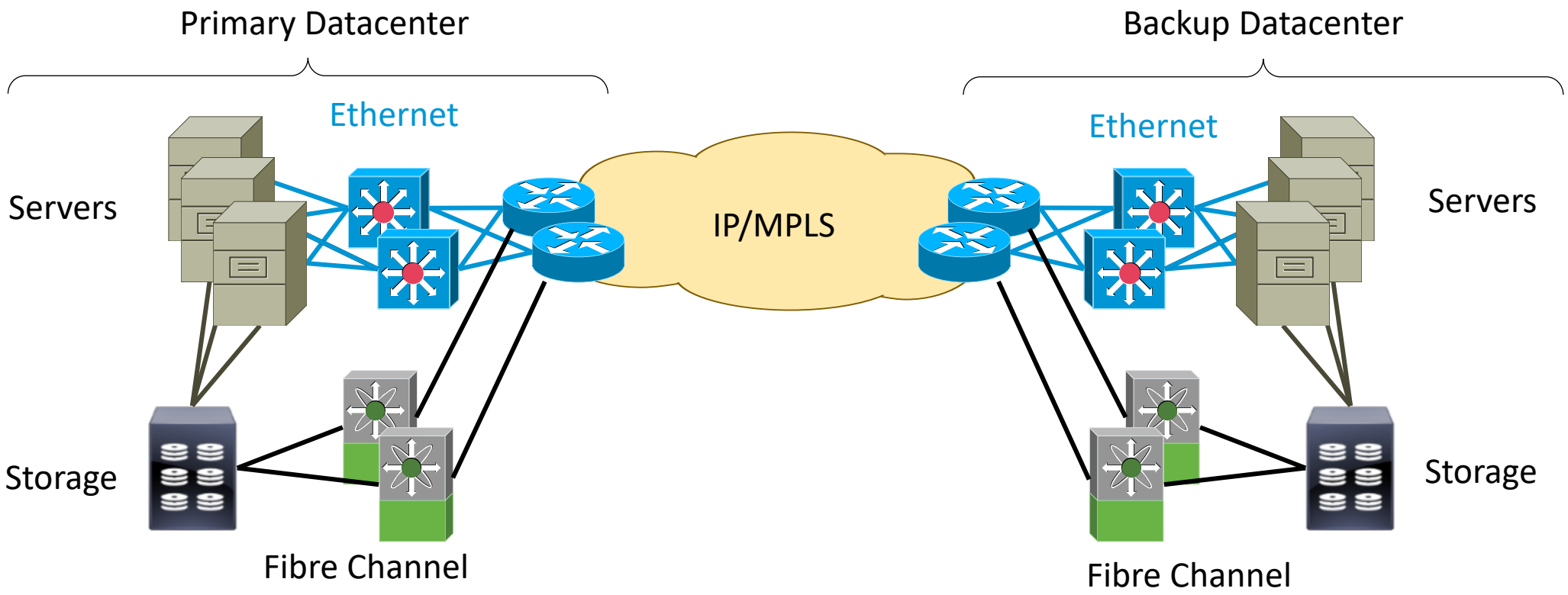
PLE Control Word



Use Case : Separate Storage Interconnect via DWDM



Use Case : Storage over a converged IP/MPLS Network



What’s new in draft-ietf-pals-ple-01 ?

- Addressed
  - comments (clock requirements) from Alexander Vainshtein
  - extensive review feedback from Erik van Veelen
  - review edits from Christopher Brown
- Worth to highlight (including changes in -00)
  - Revised Figure 2 and text around clock requirements
  - New section on Energy Efficient Ethernet
  - Rate compensation for 200GBASE-R and 400GBASE-R
  - Clarified NSP functions for OTN services

Signaling Bit-stream Pseudowires via LDP

- Existing work
  - RFC 5287 does specify extensions for SAToP (RFC 4553) and CESoP (RFC 5086)
  - CEP specifics are directly defined in section 12 of RFC 4842
- Proposal (draft-schmutzer-pals-ple-signaling)
  - Follow the approach of RFC 5287 and RFC 4842
    - new PW type for PLE to be allocated by IANA
    - Reuse CEP/TDM payload bytes as is to negotiate a common payload size
    - Reuse CEP Options and CEP/TDM Bit-rate sub-TLVs to identify AC type unambiguously
  - Introduce new Endpoint-ID sub-TLV
    - To ensure correct pair of ACs is connected (Similar to Trail Trace Identifier (TTI) in OTN)

Fyi - proposal in BESS WG

Signalling Bit-stream Pseudowire via BGP

- Leverage existing EVPN-VPWS [RFC8214] mechanisms plus ensure that
  - Same pseudowire type, AC type and payload size on both ends
  - Correct pair of ACs is connected
- Solution to cover all bit-stream pseudowires: PLE, SAToP, CESoP and CEP

Requirement	EVPN-VPWS New BGP Bitstream Attribute with TLVs	LDP
Pseudowire type	PW Type	PW Type[1] [RFC 8077]
Payload size	PLE/CEP/TDM Payload Bytes	CEP/TDM Payload Bytes[2] [RFC 5287]
Attachment circuit type	PLE/CEP/TDM Bit-rate	CEP/TDM Bit-rate[2] [RFC 5287]
	PLE/CEP Options	TDM Options[2] [RFC 5287]
		CEP Options[2] [RFC 4842]
Attachment circuit pair	Endpoint-ID	Endpoint-ID [draft-schmutzer-pals-ple-signaling]

1) PWid or generalized PWid FEC element
2) LDP Interface Parameters sub-TLVs

Next Steps

- So far the focus was on the PLE dataplane
  - work got adopted in PALS as dratf-ietf-pals-ple and is progressing well
- Looking at signaling aspects now more closely
  - draft-schmutzer-bess-bitstream-vpws-signalling is defining required extensions for EVPN-VPWS for both PLE and existing TDM pseudowires
  - draft-schmutzer-pals-ple-signaling addresses LDP extensions for PLE
- Appreciate your review and comments on
  - draft-ietf-pals-ple-01
  - draft-schmutzer-pals-ple-signaling-00