# Private Line Emulation & TDM Signalling

draft-schmutzer-bess-bitstream-vpws-signalling

(was draft-schmutzer-bess-ple-vpws-signalling-02)
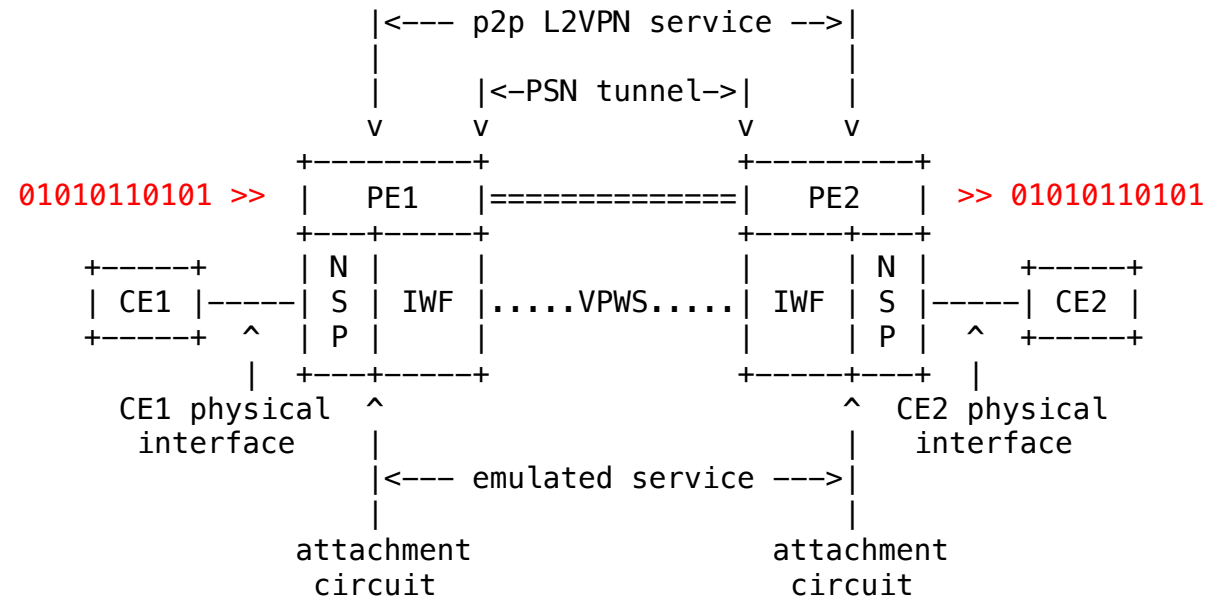
C. Schmutzer (presenter), S. Gringeri, J. Whittaker, P. Brissette, B. Vasudevan
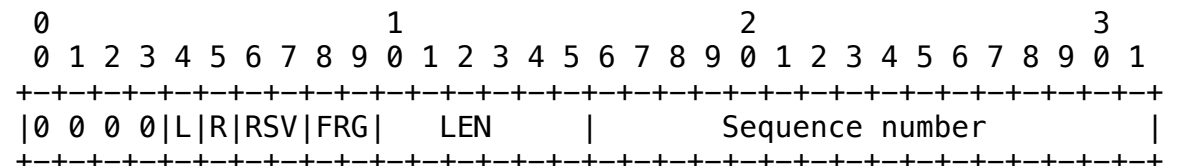
*IETF118 Prague, BESS WG*

# 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)
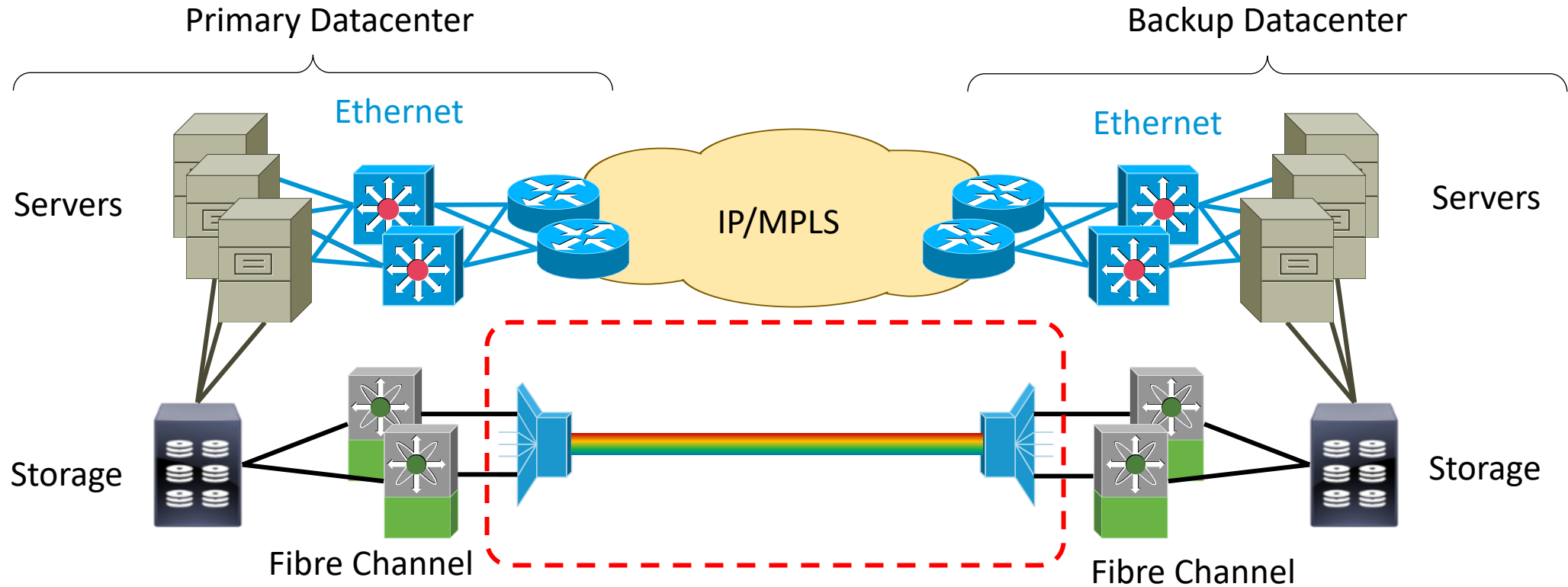- Differential clock recovery

## Reference Model

```
                      |<--- p2p L2VPN service -->|
                      |                          |
                      |       |<-PSN tunnel->|    |
                      v       v              v    v
                    +---------+            +---------+
01010110101 >>      |   PE1   |============|   PE2   |  >> 01010110101
                    +---+-----+            +-----+---+
  +-----+      | N |      |          |      | N |      +-----+
  | CE1 |------| S |  IWF |.....VPWS.....|  IWF | S |------| CE2 |
  +-----+  ^   | P |      |          |      | P |   ^   +-----+
           |   +---+-----+            +-----+---+   |
       CE1 physical  ^                      ^  CE2 physical
       interface     |                      |  interface
                     |<--- emulated service --->|
                     |                          |
                 attachment                 attachment
                 circuit                    circuit
```
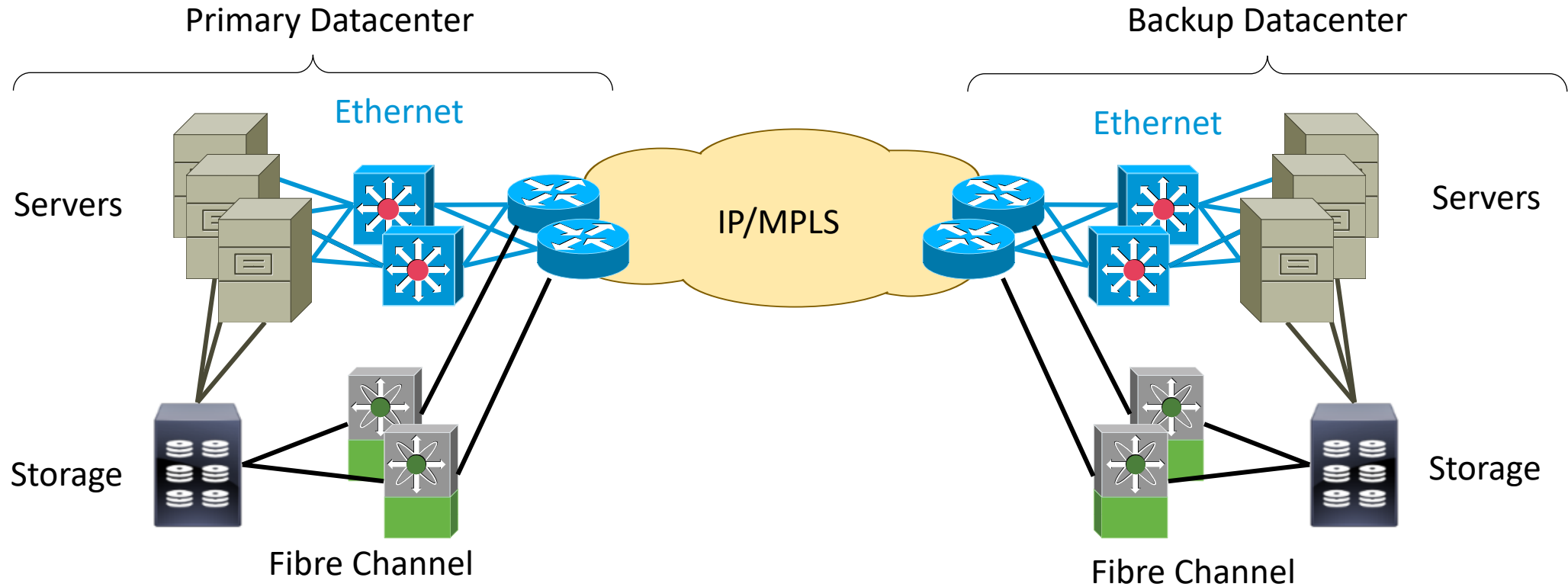
## PLE Control Word

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|0 0 0 0|L|R|RSV|FRG|    LEN    |          Sequence number      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

# Use Case : Separate Storage Interconnect via DWDM



Primary Datacenter

Backup Datacenter

Ethernet

Ethernet

Servers

Servers

IP/MPLS

Storage

Storage

Fibre Channel

Fibre Channel

Dedicated network, often managed service offering

# Use Case : Storage over a converged IP/MPLS Network



Primary Datacenter

Backup Datacenter

Ethernet

Ethernet

Servers

Servers

IP/MPLS

Storage

Storage

Fibre Channel

Fibre Channel

# Signalling Requirements → new BGP Attribute

- 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<br>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-signalling] |

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

# Next Steps

- Asking for review and comments on the signalling approach

- Dataplane work got adopted in PALS and has matured by now
  - Requesting BESS working group to consider WG adoption call for draft-schmutzer-bess-bitstream-vpws-signalling to progress signalling work as well