
Generic PHY Specification: (SONET/SDH)

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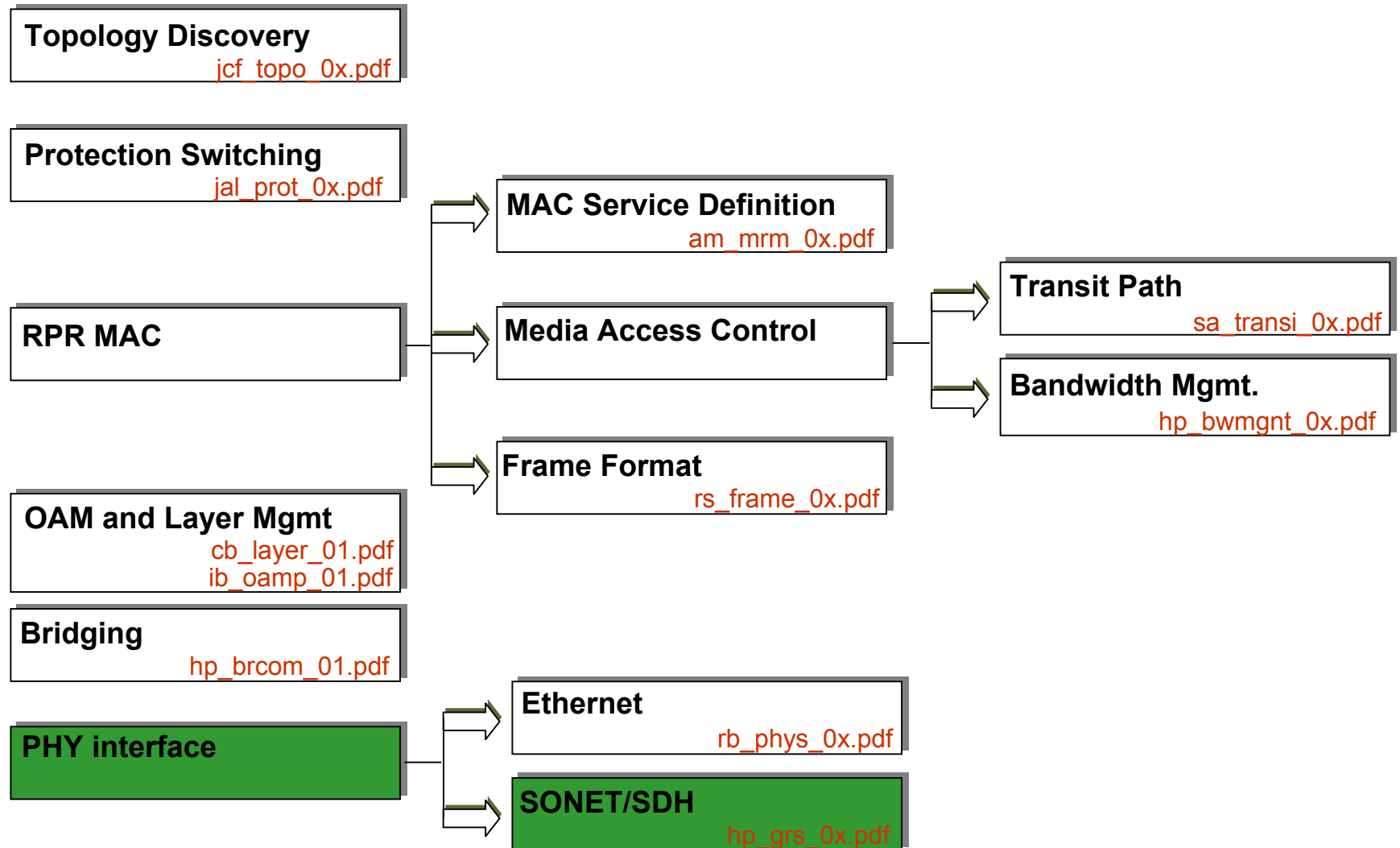
Italo Busi: [Alcatel](#)

Rhett Brikovskis: [Lantern](#)

Harry Peng (presenter): [Nortel](#)

Frederic Thepot: [Dynarc](#)

Components of Complete RPR Proposal



Goal

- Use a universal P-SAP logical interface compatible with various PHY types
- T1X1/ITU PHY support
- Future proving the specification
 - Generic Framing Process (GFP)
 - SONET/SDH
 - OTN
- Reconciliation Sublayer/ P-SAP
- Define Physical specification
 - Various application rates

Frame Structure

MA_DataUnit.request MSAP **MA_DataUnit.indicate**

MAC

PSAP

Generic PHY RS

SPI-n/PL2



GFP
Frame delineation

Coding

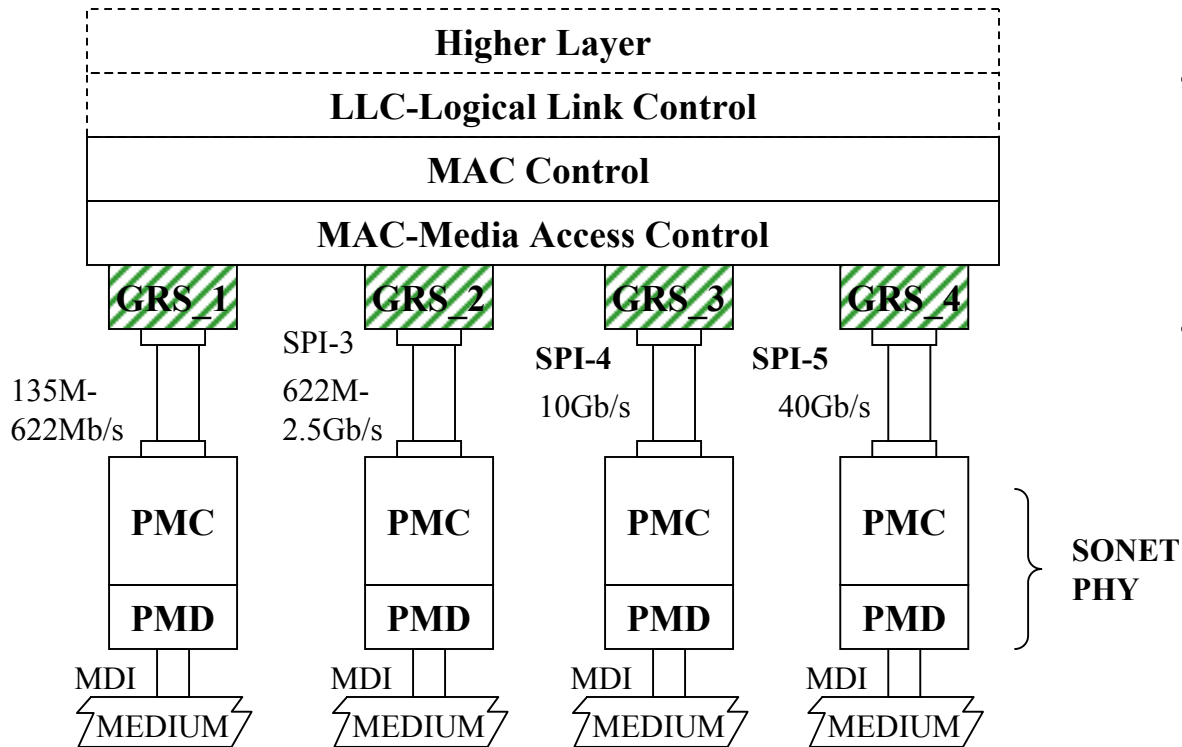
SONET
SDH

OTN

PHY



Generic Reconciliation Sublayer



- Generic RS
 - Generic frame structure
 - Generic Packet transfer interface
- Physical Media Component (PMC)
 - Word level flow control
 - X^{43+1} scrambling
 - GFP Framing
 - Idle frame
 - Frame Delineation
 - HEC
 - SONET/SDH frame
 - POH/TOH
- PMD
 - CDR
 - λ

RS Physical Specifications

Define 4 RS with the following Physical Interfaces

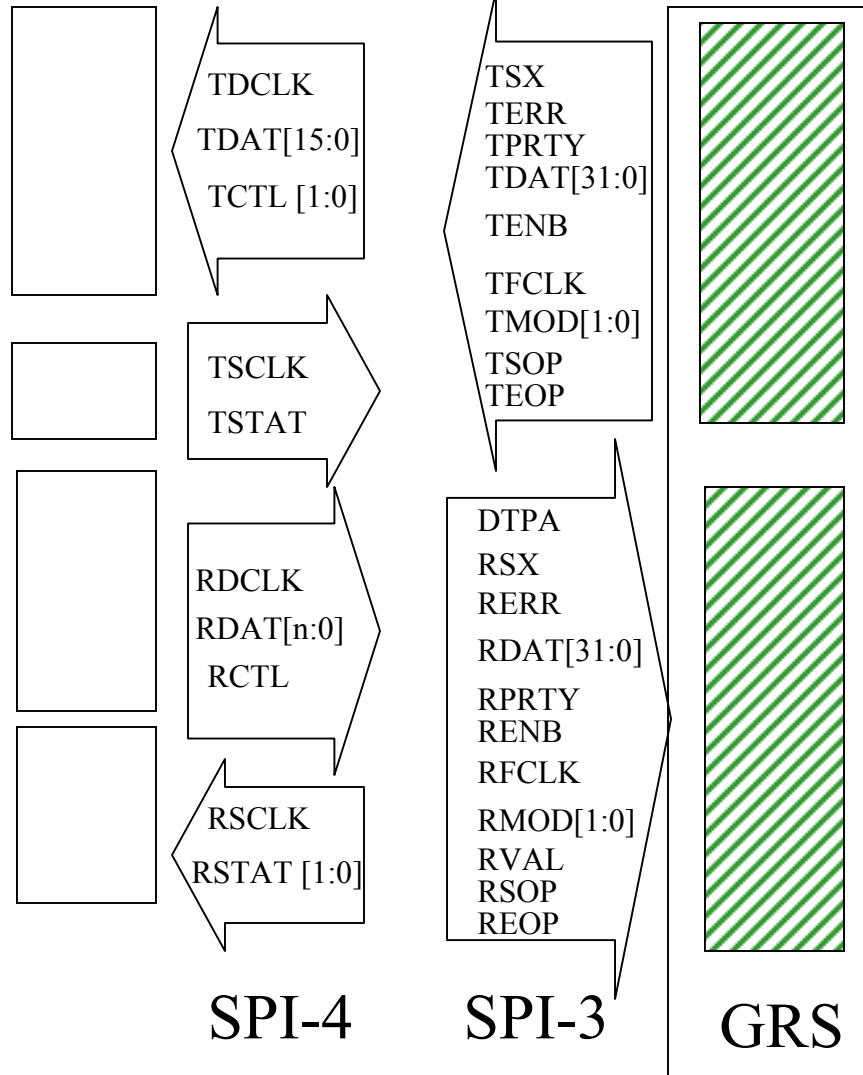
- 40G SPI-5
- 10G SPI-4 phase 2
 - 16 bits
 - 800 M clock
 - LVDS
- 2.5G SPI-3 and below
 - 8/32 bit interface
 - Up to 104 MHz clock
 - LVTTTL
- 622 and below SPI-3 8 bits
 - SPI-3 like
 - LVTTTL

Support for Logical channels

Word level flow control

Mapping of Primitives

SPI-PHY



SPI-PHY

SPI-LINK

PHY_Data.request

PHY_Data_valid.indicate

PHY_Data.indicate

PHY_READY.indicate

PHY_LINK_OK.indicate

SPI-4

SPI-3

GRS

Management Issues

- No PHY Management interface
- Management object for interface: 4 types
 - Clock speed and bus width
 - Logical channel provision
 - FIFO provision
- Indications from PHY
 - FIFO status
 - Rx fault stats
 - Remote fault stats, no hw consequence action
 - Interface types SPI-5, SPI-4, and SPI-3/ SPI-like
 - For SPI-3 or lower
 - Interface clock selection
 - Interface Bus width

Conclusion

- Separate Reconciliation sublayer from ethernet using a common PSAP interface
- Generic RS to support different SONET/SDH interfaces: 4 types
- Support for GFP
 - T1X1 standard for data on SONET/SDH and OTN
- Physical Interfaces specifications: SPI-n and a SPI like (TM)