Physical Level
Light Weight Address

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EFM OAM Is At The Edge Of The Service Provider Infrastructure

- Each EFM Deployment is an isolated infrastructure.
- “Head-end” system (OLT) will always be the default Send/Receive Node for the “CPE” “tail-end”/ONU systems.
- Only the “tail-end”/ONU systems need to be identified for OAM and service demark/management purposes.
- “Head-end”/OLT system does not need an “address”.
- ONU does not need full Destination/Source “address” to isolate and identify each individual “tail-end”/ONU systems.
- Numbers of supported “tail-end”/ONU systems in each deployment infrastructure is small compared to globally unique 802.3 address space.

EFM OAM Should Not Need To Use 802.3 MAC Address

Physical Level
Light Weight Addressing

- Needs to function below MAC level, primarily only at the Physical level.
- Only the “tail-end”/ONU systems need an “address” for identity within a specific deployment infrastructure.
- Need to have reserved “group” “address” to provide for common/shared service functions.
- Need to have a reserved “broadcast” “address” to provide for service management functions that are “global” within a specific deployment infrastructure.
- Needs to work for Cu, P2P,P2MP, and Full Duplex Intelligent Regenerator/Repeaters on all PMDs

Physical Level
Light Weight Addressing
Operations Identifier (OID)

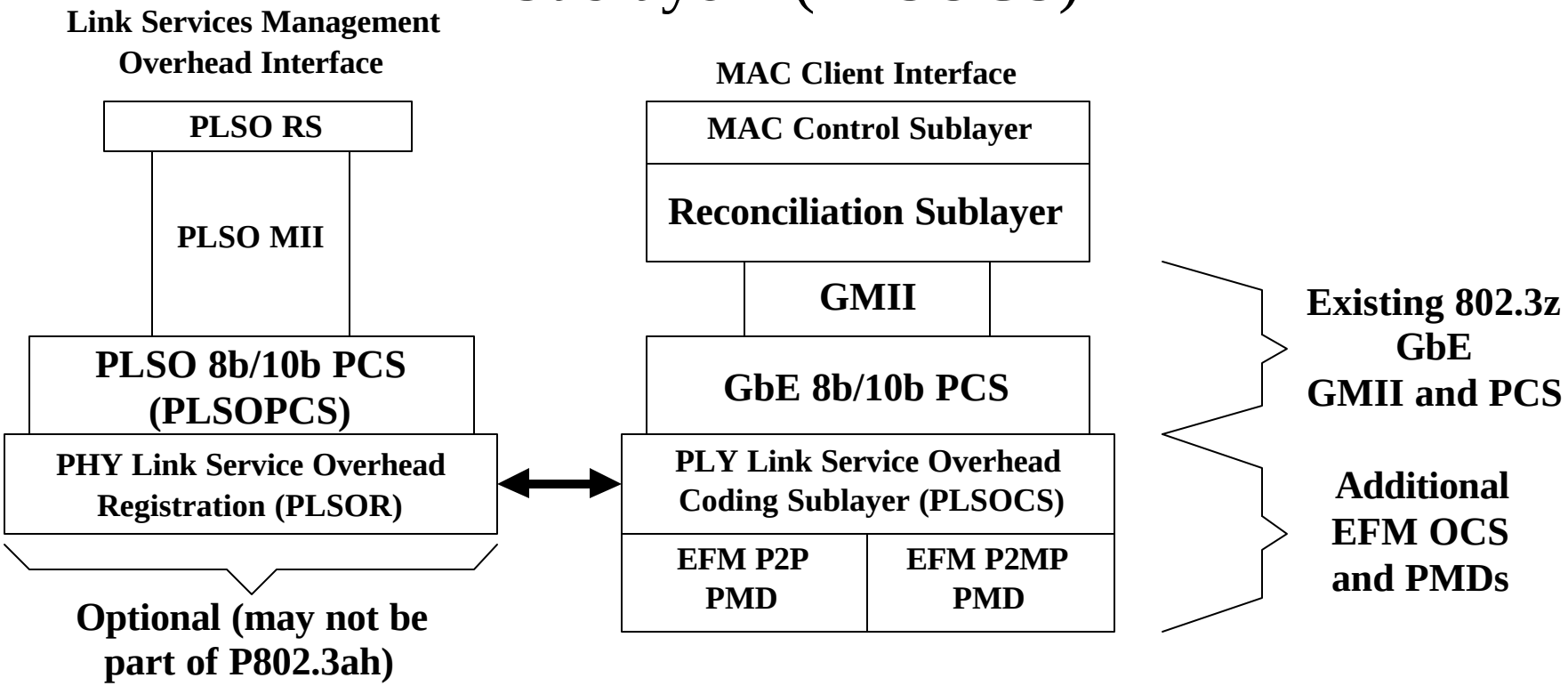
- Single Octet of Address Space (256 addresses).
- Reserve “0” for default address of the “Head-end”/OLT system
- Reserve “255” (“all ones”) for global broadcast address for all “Tail-end”/ONU systems
- Reserve ~”201-224” addresses to “group” services and service functions
- 200 “Tail-end”/ONU addresses available per deployment infrastructure off of each “Head-end”/OLT “interface”

Physical Level
Light Weight Addressing

- The Operations Identifier OID is always that of a “Tail-end”/ONU system OAM “interface”
- If the “Head-end/OLT system is transmitting, the address is the destination “Tail-end”/ONU (DOID)
- If a “Tail-end”/ONU system is transmitting, the address is the source “Tail-end”/ONU (SOID)

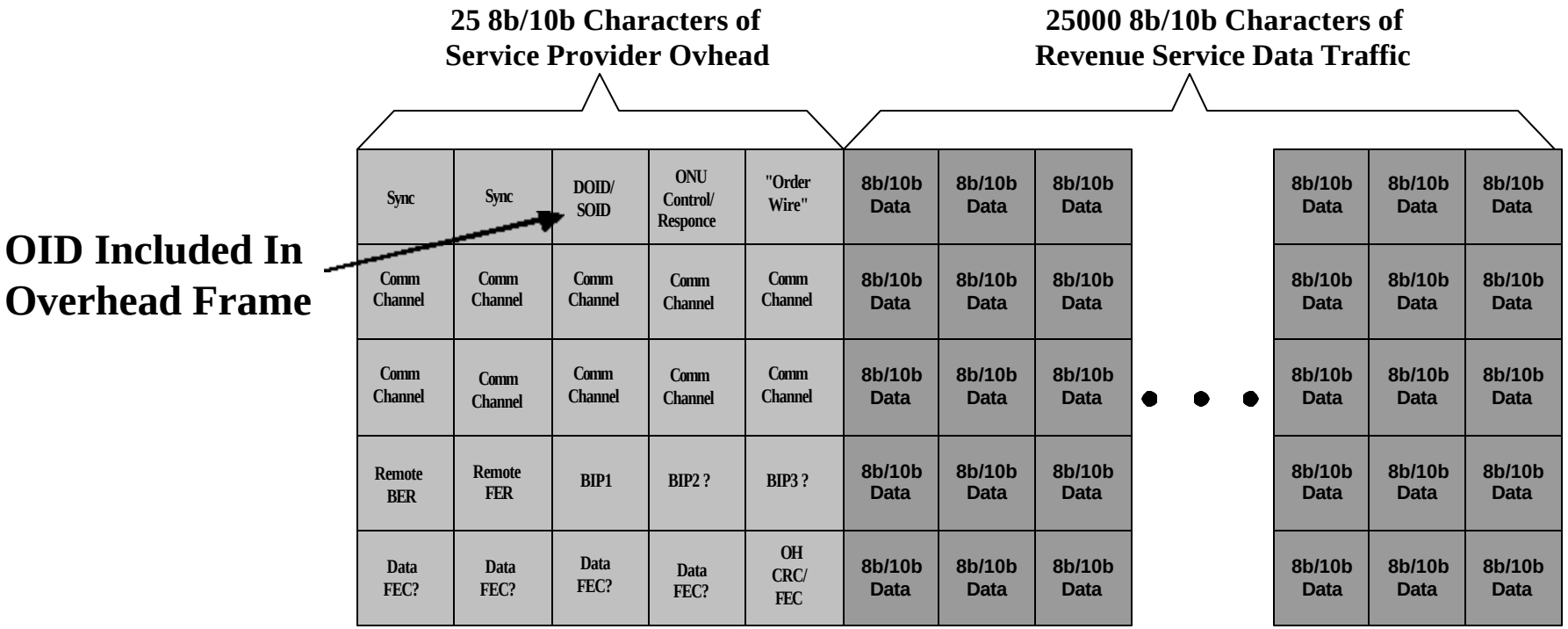
Physical Level Light Weight Addressin Can Operate Below The Existing GbE

Is used in the “Physical Link Service Overhead Coding Sublayer” (PLSOCS)

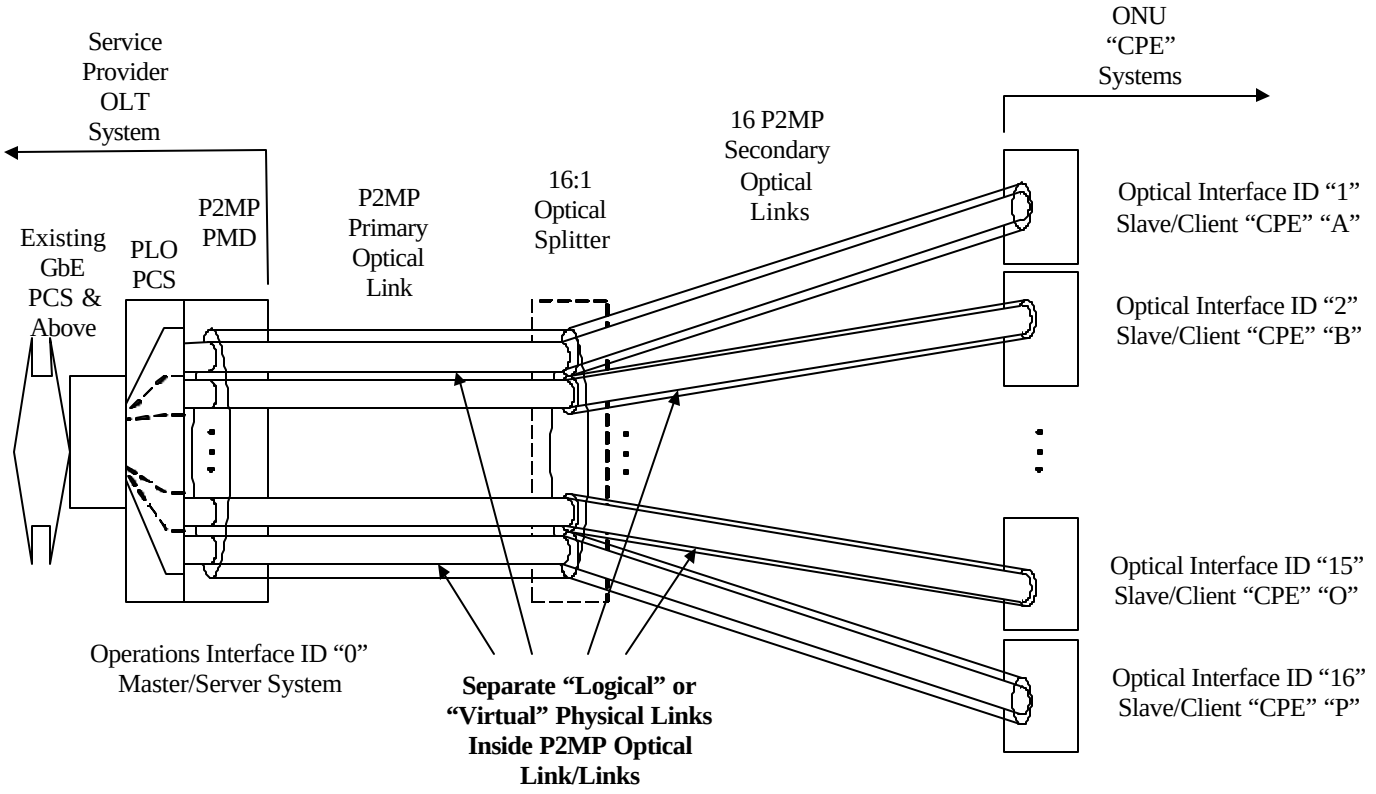


OID in PLSOCS Overhead Inserted as Synchronous Framing of GbE Steam

A synchronous frame of 25 8b10b blocks inserted every 200µs into GbE 8b10b Coded Data Stream



PHY Light Weight Addressing Can Support P2MP Infrastructure



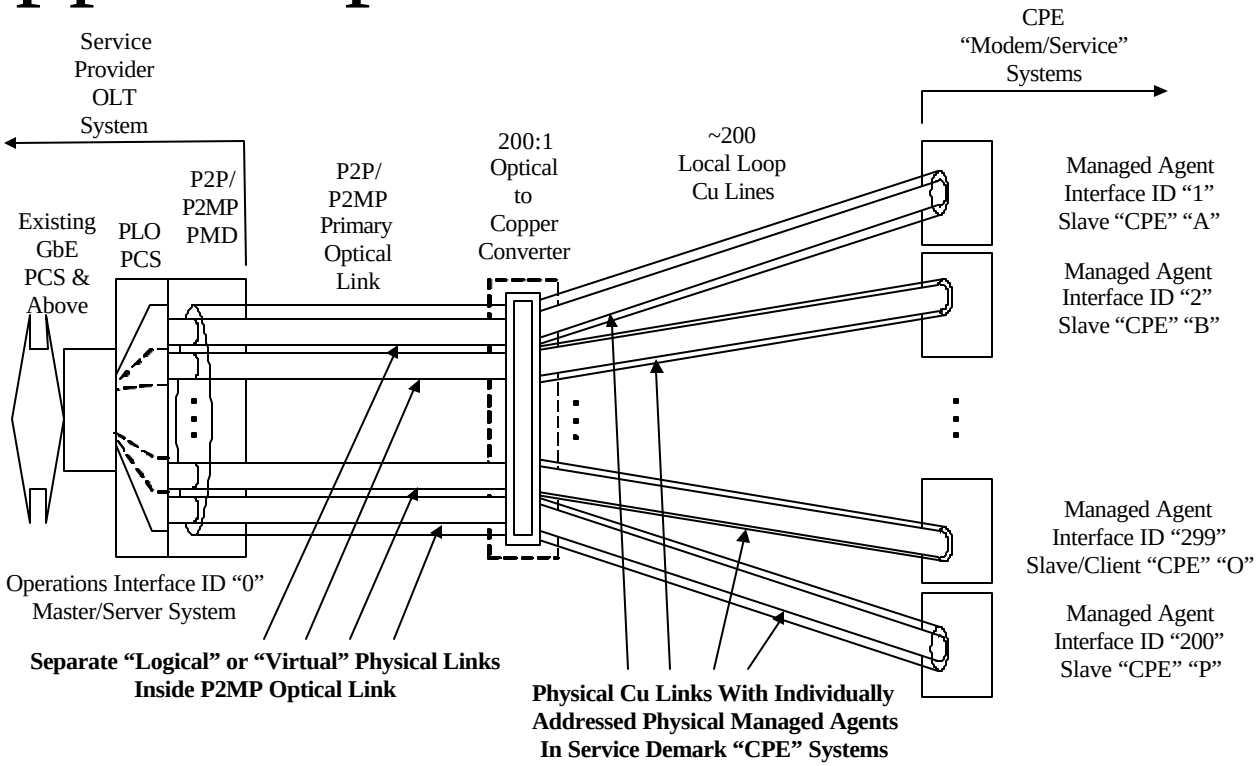
Physical Node Light Weight Addressing
Uses A Single Octet For Source/Destination Address Of ONU
OLT Address Is Default Receive/Send System

OAM Overhead → ONU Destination Operations ID (DOID)

OAM Overhead ← ONU Source Operations ID (SOID)

Source and Destination Operations Interface IDs (Using The SOID/DOID Field) Within The OAM Overhead Provides For Secure Communications For Services and Management Over P2MP Optical Deployments

PHY Light Weight Addressing Can Support Optical to CU Infrastructure



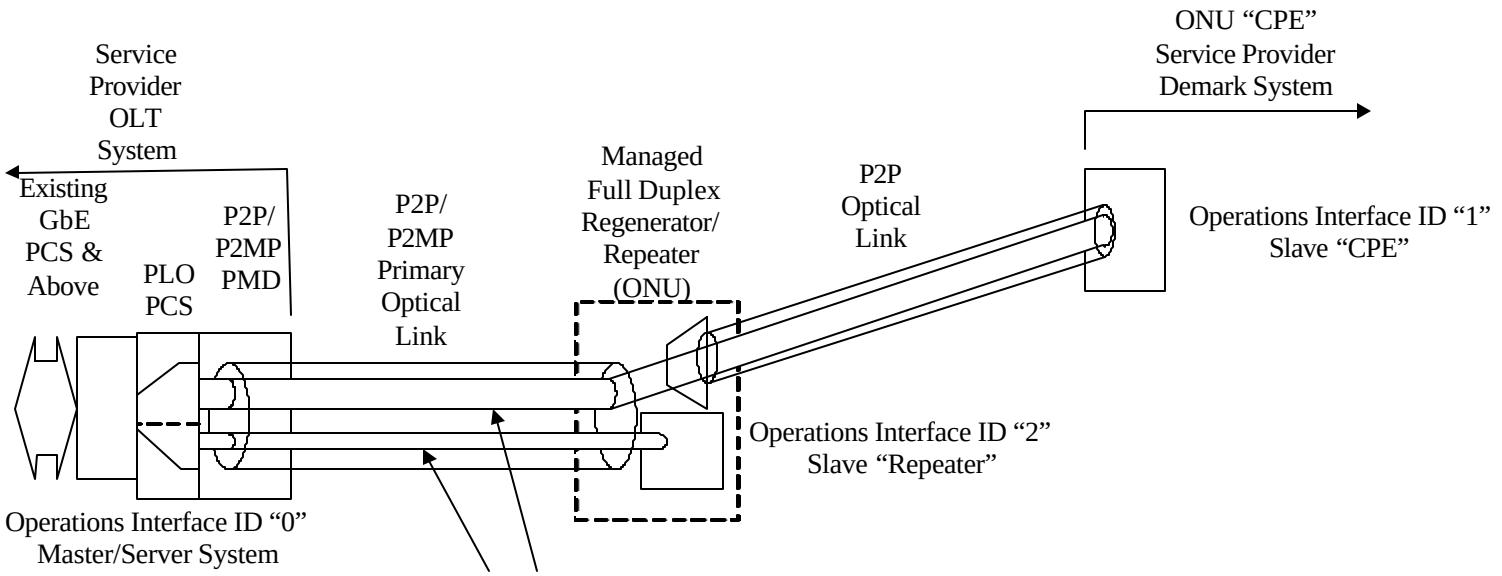
Physical Node Light Weight Addressing
Uses A Single Octet For Source/Destination Address Of "CPE"
OLT Address Is Default Receive/Send System

OAM Overhead → Destination Operations ID (DOID)

OAM Overhead ← Source Operations ID (SOID)

Source and Destination Operations Interface IDs (Using The SOID/DOID Field) Within The OAM Overhead Provides For Secure Communications For Services and Management Over P2MP Optical/Copper Deployments

PHY Light Weight Addressing Can Support P2P Regen/Repeaters



Physical Node Light Weight Addressing
Uses A Single Octet For Source/Destination Address Of ONU
OLT Address Is Default Receive/Send System

OAM Overhead → ONU Destination Operations ID (DOID)

OAM Overhead ← ONU Source Operations ID (SOID)

Source and Destination Operations Interface IDs (Using The SOID/DOID Field) Within The OAM Overhead Provides For Secure Communications For Services and Management Of Repeaters Over P2P Optical Deployments

PHY Light Weight Addressing Is The Most Reasonable Way to Support EFM “Tail-end”/ONU OAM

- Simple, low overhead of a single octet
- More than enough address for P2MP optical
- Reasonable number of address for Cu LL
- Support of intermediate “Repeaters”
- Minimal impact for single P2P deployments
- Able to address multiple OAM interfaces per services demark/node without using up 802.3 addresses