



# Joint ITU/IEEE Workshop on Ethernet - Emerging Applications and Technologies

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## IEEE P1904.1 SIEPON Scope and Structure

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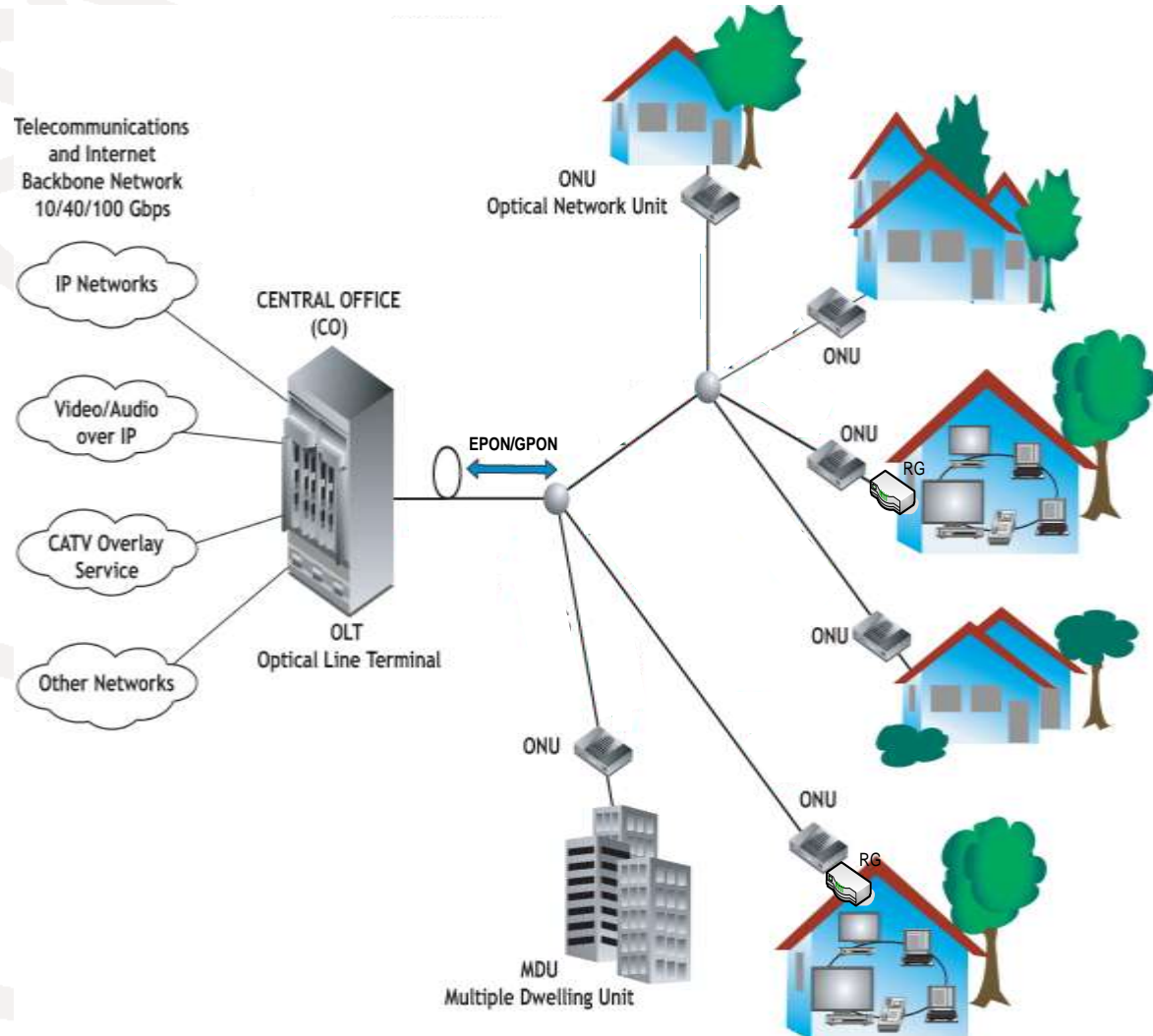
- **SIEPON – Service Interoperability in Ethernet Passive Optical Networks**
- The target of SIEPON is to develop the ecosystem based on the IEEE802.3 EPON and 10GEPON systems
- IEEE802.3 defines the PHY L1 and MAC L2, as traditionally done for Ethernet equipment
- SIEPON completes the system aspects of the solutions that are required for carrier grade, optical access equipment
  - SIEPON unifies the multiple, national based systems, existing in the market
  - SIEPON develops a consistent and unified framework for treating:
    - multiple service models
    - multiple provisioning and management models
    - multiple deployment scenarios

EPON is the market-leading optical access technology

Support a diverse suite of business and residential services

- IPTV, VoIP, data and cellular backhaul

Large-scale deployments in Japan, China, Korea, and MSOs, soon reaching **100M subscribers**



# The structure of SIEPON

**SIEPON ensures end to end interoperability in the EPON**

- SIEPON defines a flexible architecture that can serve multiple operators with EPON deployment
  - ➔ Contain and align multiple vendors in the supply chain
  
- Coordinate the different SDOs dealing with the PON optical access
  
- Coordinates and develops a conformance and certification program

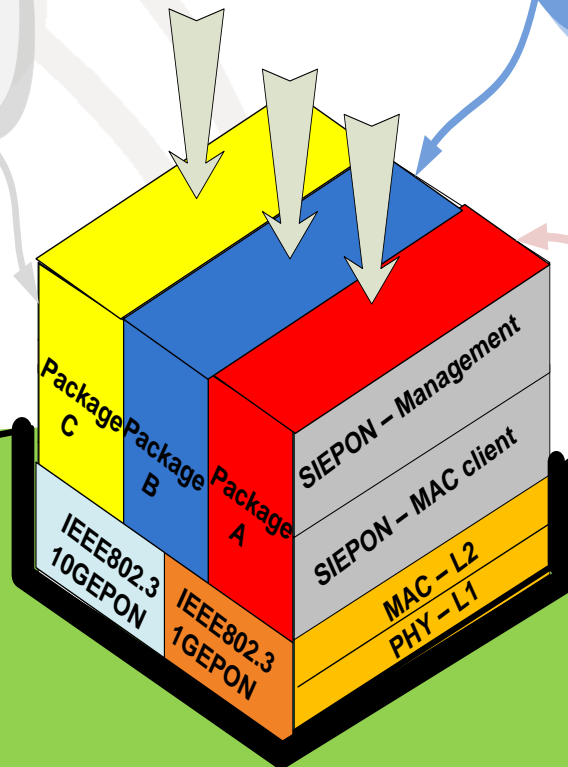
BBF – FAN

TR-200  
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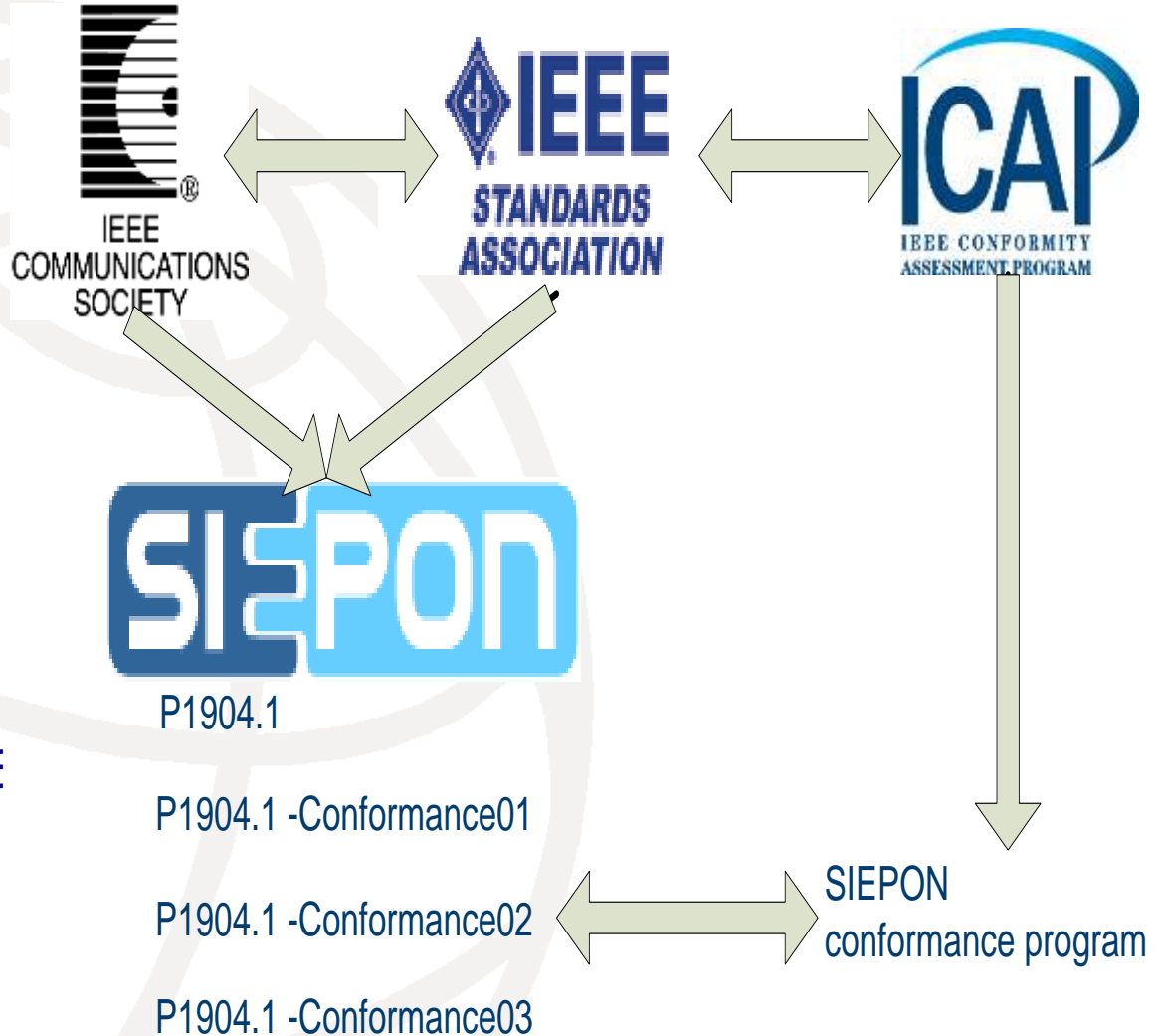
Carriers

ITU-T SG15/  
Q2  
G.epon

CableLabs  
DPoE



- SIEPON - P1904.1
- SIEPON was founded in 2009 by IEEE SA and ComSoc
- Entity based project  
– Entity must be IEEE Corporate member for participating



# P1904.1 structure and staff

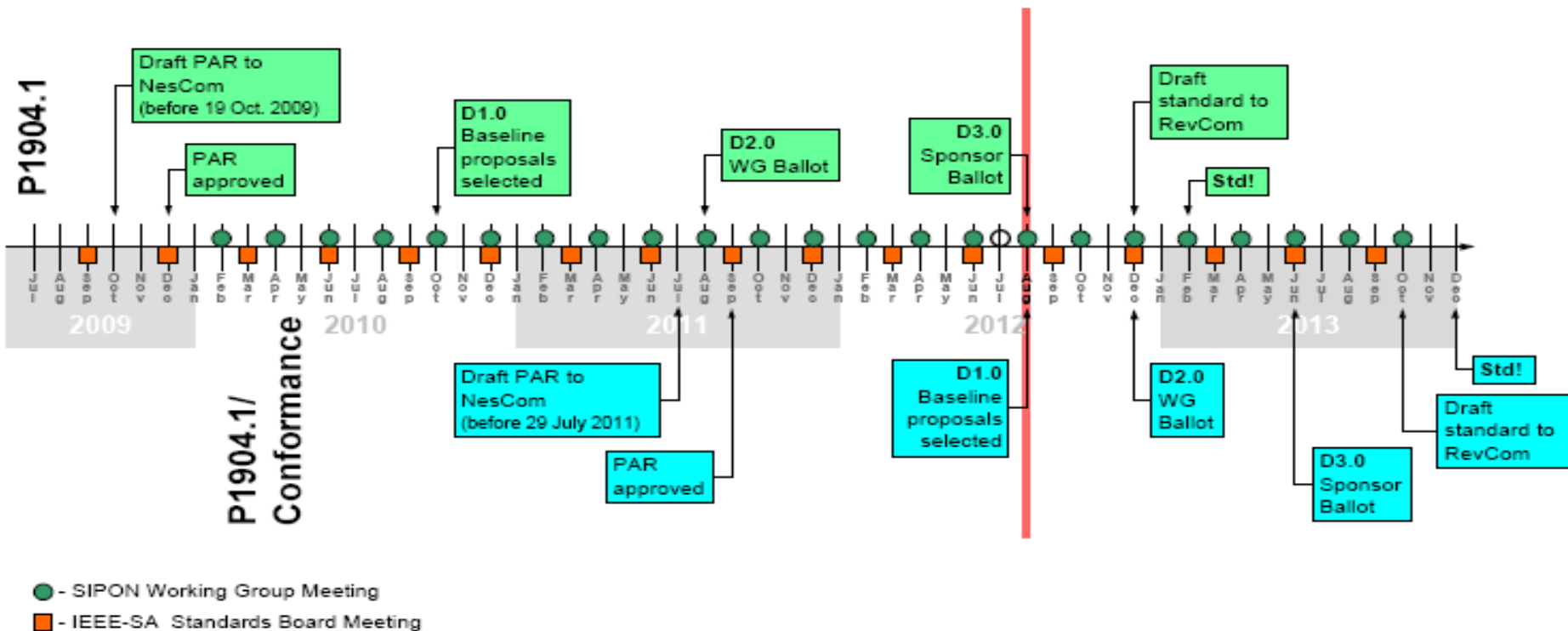
## ■ SIEPON Officers

- ▶ Chair – Glen Kramer, Broadcom Corporation
- ▶ Vice Chair - Ken-Ichi Suzuki, NTT Corporation
- ▶ Chief editor - Marek Hajduczenia, ZTE Corporation
- ▶ Executive Secretary - Zhou Zhen, FiberHome Technologies

	<b>TF1 -Service configuration and Provisioning</b>	<b>TF2 - Performance requirement and Service quality</b>	<b>TF3 -Service Survivability</b>	<b>TF4 - Management</b>	<b>TF5 - Conformance Test Procedure</b>
Chair	Lior Khermosh, PMC-SIERRA	Curtis Knittle, CableLabs	Seiji Kozaki, Mitsubishi Electric Corp	James Chen, Hitachi, Ltd	Toshihiko Kusano, Oliver Solutions
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					B - Motoyuki Takizawa, FTN Ltd
					C - Liu Qian, RITT

# Status of the specifications

- **SIEPON Spec is mature**
- Currently in Sponsor Ballot - Draft 3.0 is rolling
- The spec is divided into 3 packages driven by main Carriers deploying EPON
- Focus starts to be on conformance
  - ◆ Creating baselines for all test suites
- ICAP started a conformance program
  
- SIEPON spec defines for the ONU and OLT the process flows, state diagrams and frame formats defined for each feature
  - ◆ An extensive set of Protocol Implementation Conformance Statements (PICS) enables to confirm unambiguously that product behavior complies with the requirements
  - ◆ SIEPON develops test suits that matches the PICS





## ■ Service configuration and provisioning

- ◆ Features for connectivity, like frame classification and manipulation, forwarding rules
- ◆ A unified data path model describing VLAN modes, tunneling modes and multicast modes

## ■ Performance requirements and service quality

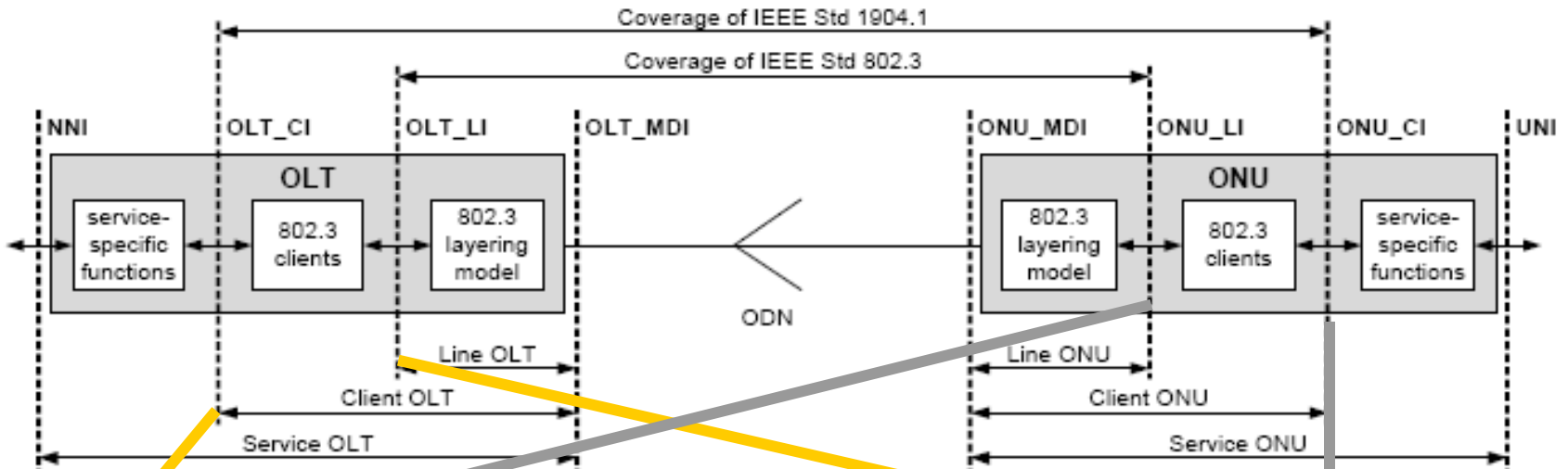
- ◆ Features for service performance, including real-time control of delay, jitter, packet loss, and bandwidth guarantees

## ■ Service Survivability

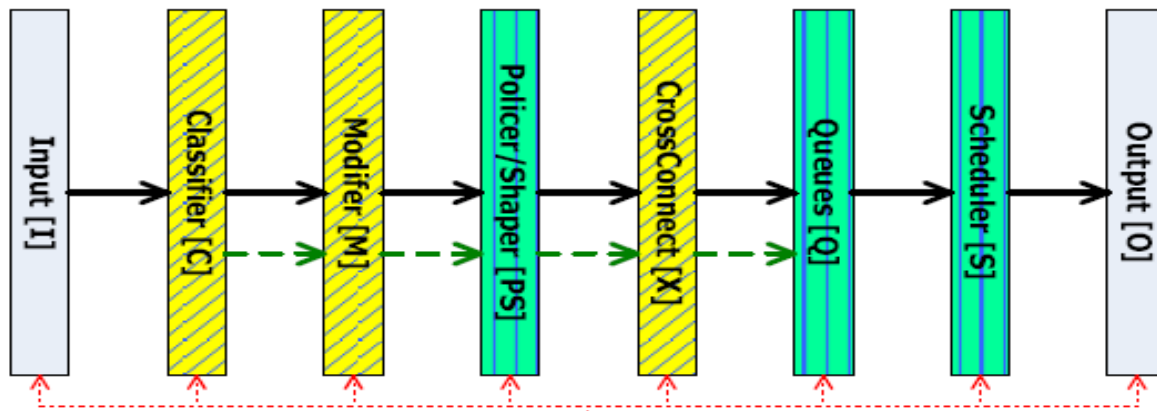
- ◆ Features for service availability, including definition of monitoring mechanisms, system alarms, path protection and power saving methods

## ■ System/device maintenance and management

- ◆ features for operating EPON as a managed, secure, public network, including device and port authentication, software management, and device-capability discovery.



a) OLT and ONU with service-specific functions



- Block controls connectivity
- Block controls performance

Provisioning / Alarms & Status

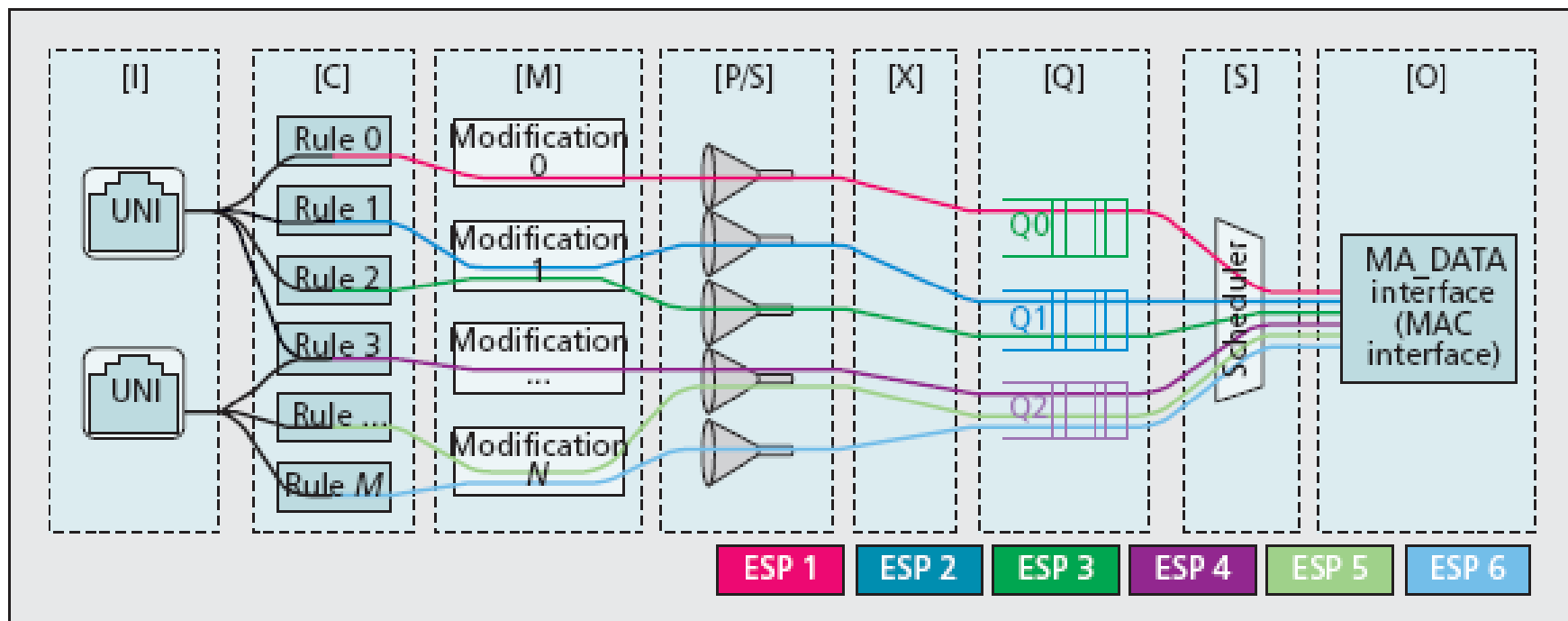
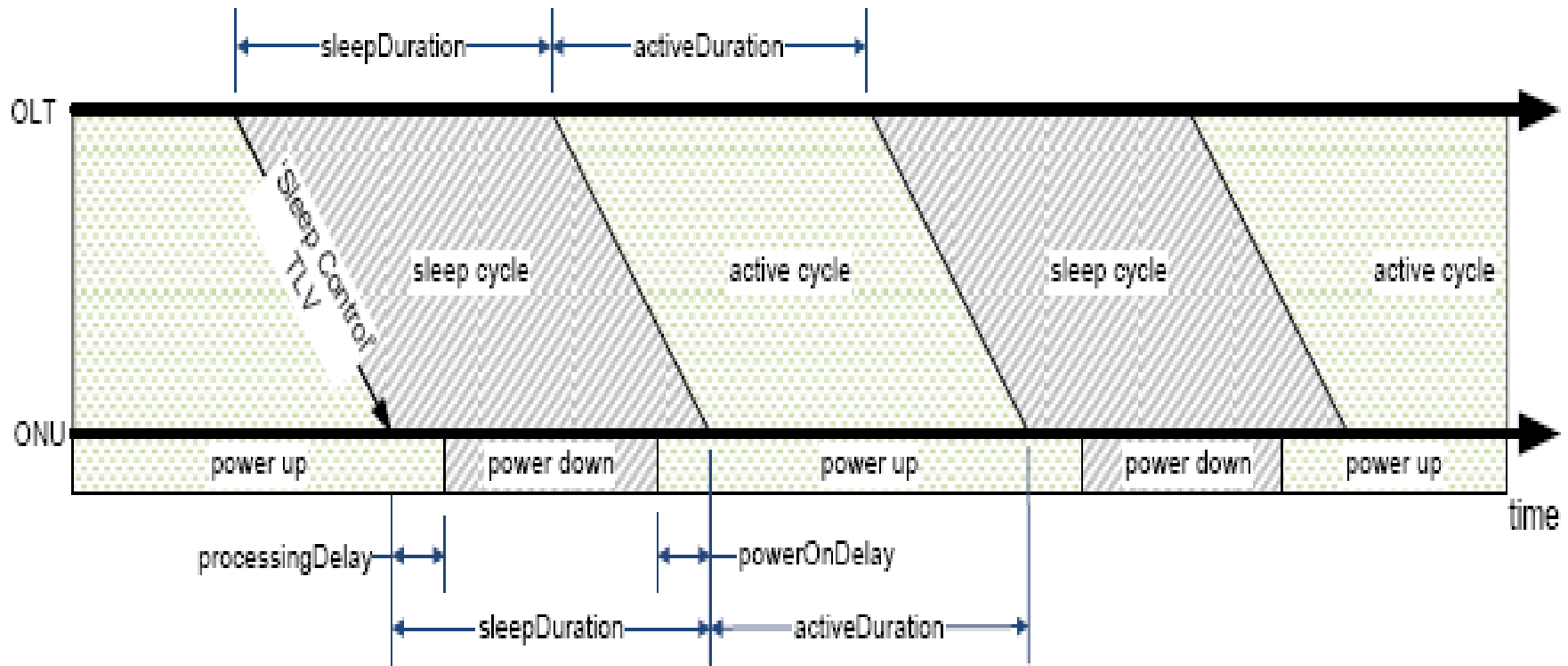
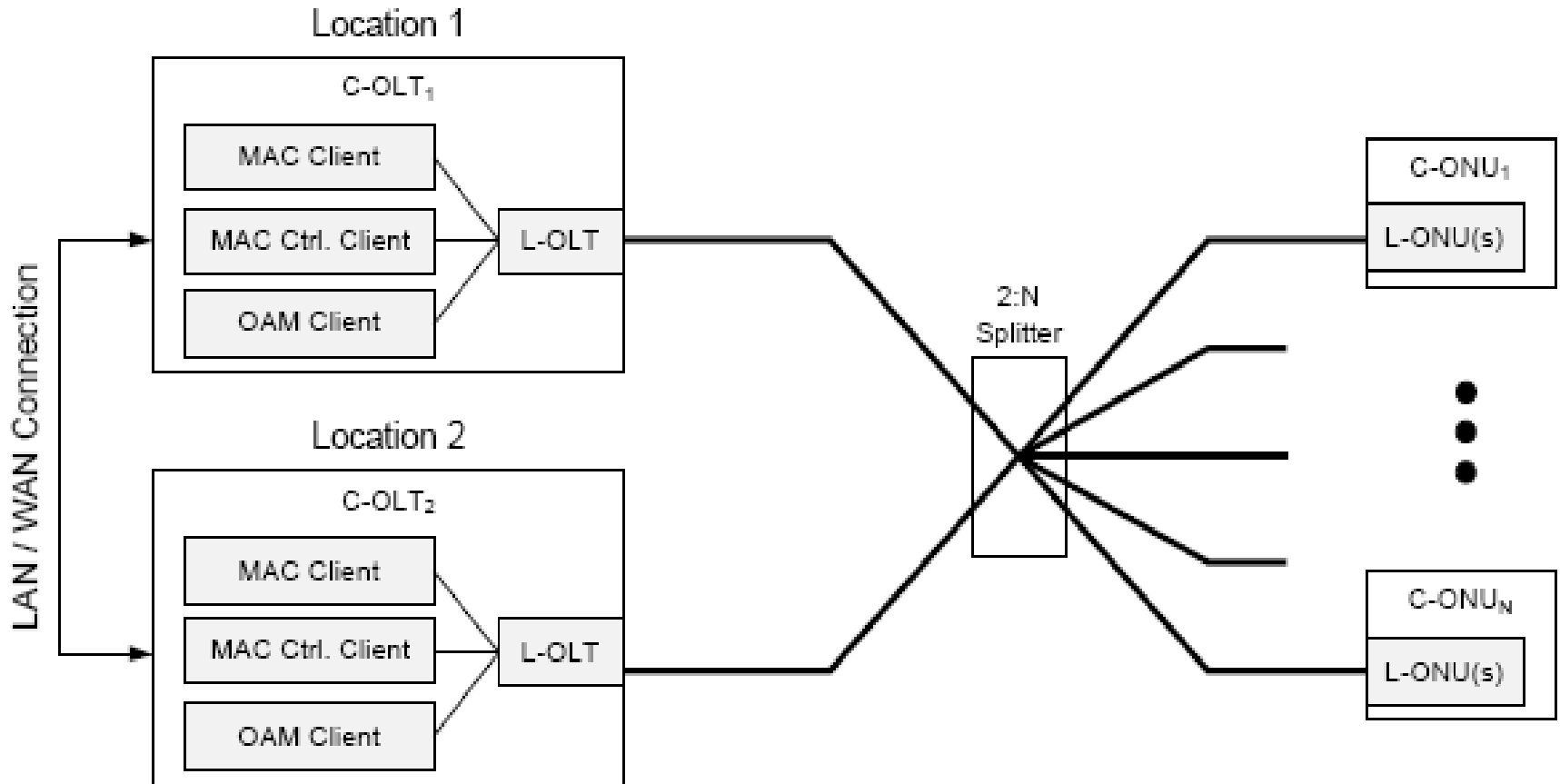


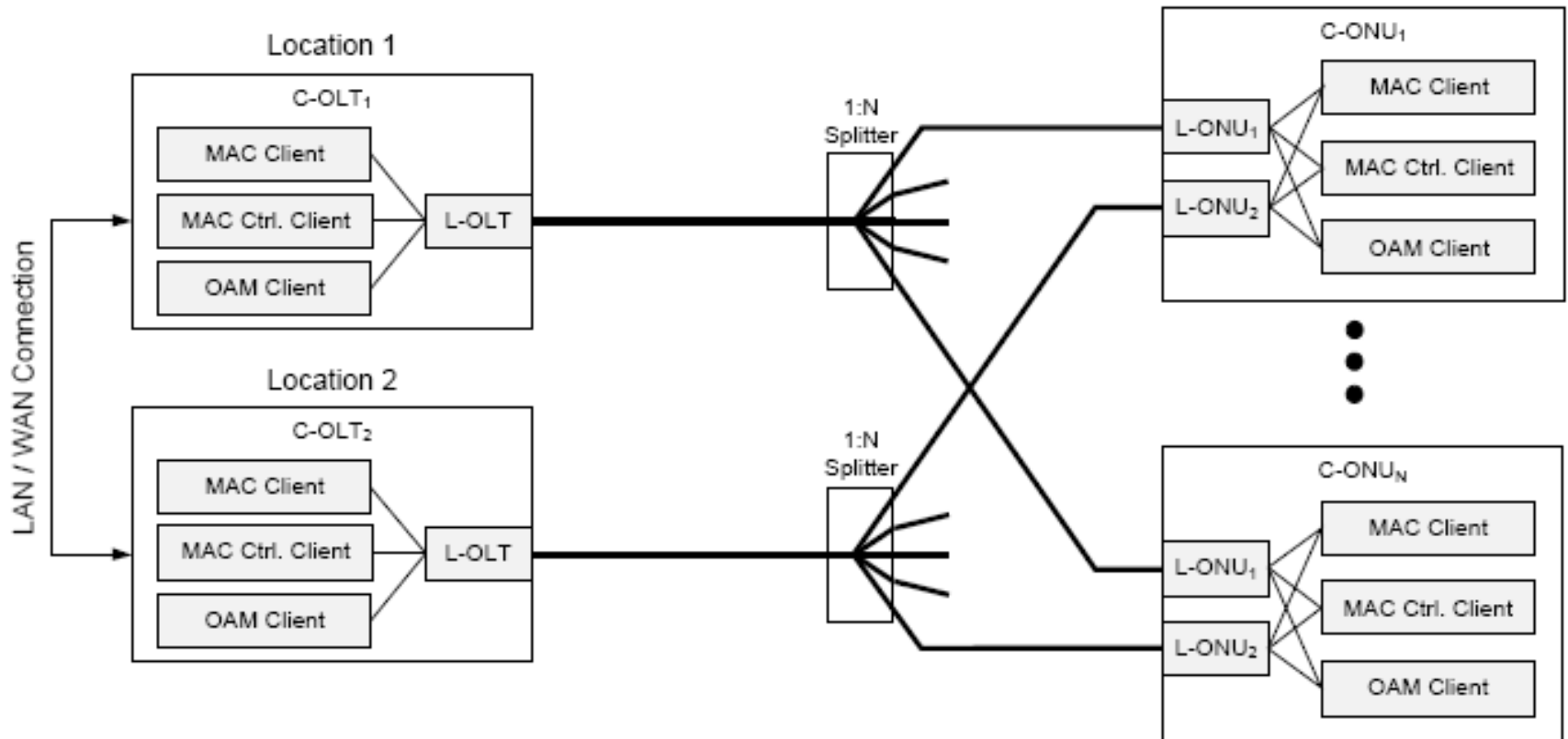
Figure 3. Illustration of multiple ESPs in the MAC Client.



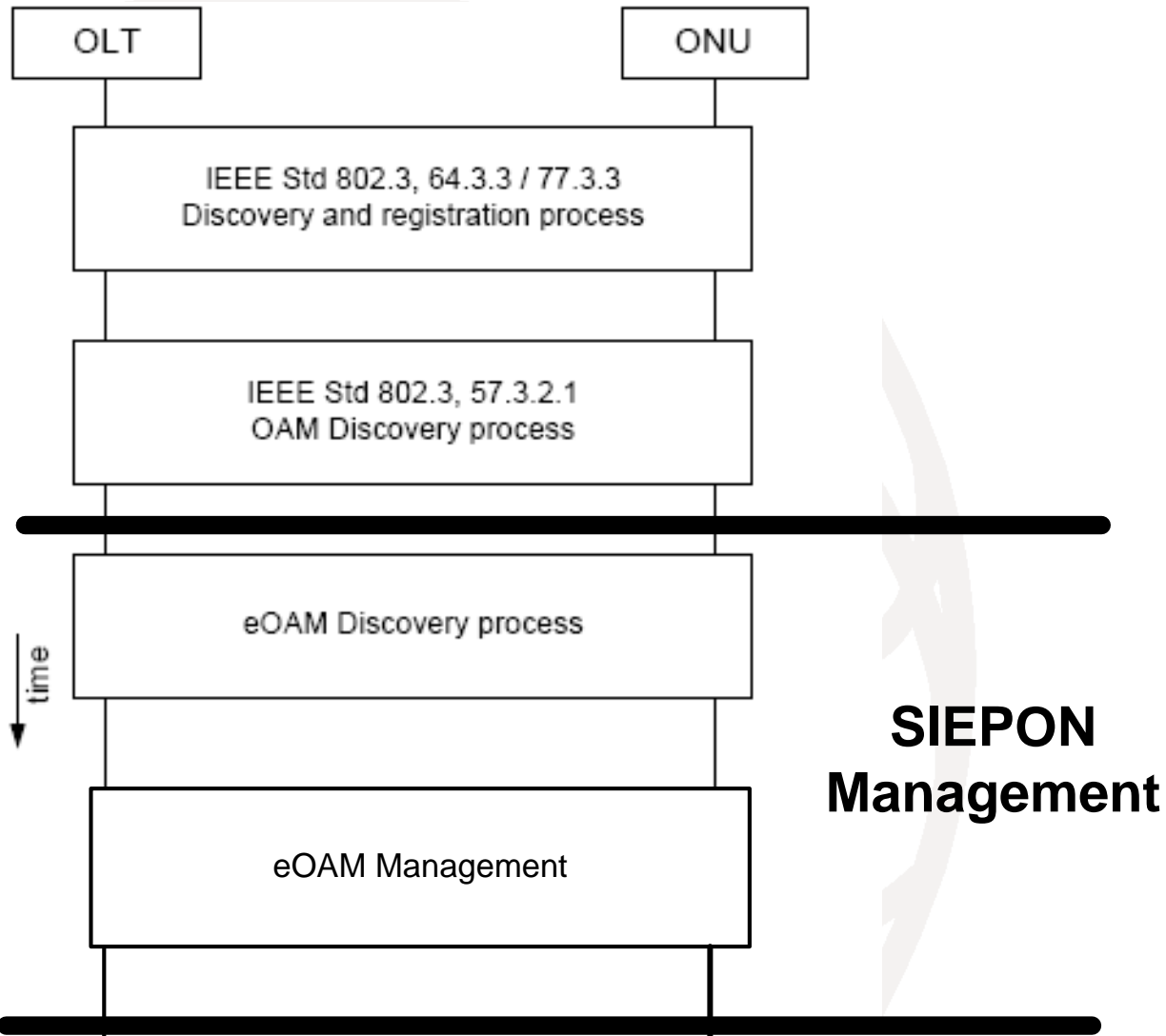
**Figure 10-1—Timing diagram of a power saving cycle**



**Figure 9-9—Trunk protection with redundant C-OLT.**



**Figure 9-13—Tree protection with redundant C-OLT**



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