

Terawave Communications

Frame Formats

A night cityscape with illuminated buildings and bridges reflected in water. The scene is set against a dark blue sky with light rays emanating from behind the buildings. The buildings are lit up in various colors, including orange, yellow, and blue. The bridges are silhouetted against the sky. The water in the foreground is calm, reflecting the lights from the buildings and bridges.

Lighting The First Mile™

Ryan Hirth – January 14-16, 2002 IEEE-EFM Raleigh, NC

Keep it Simple

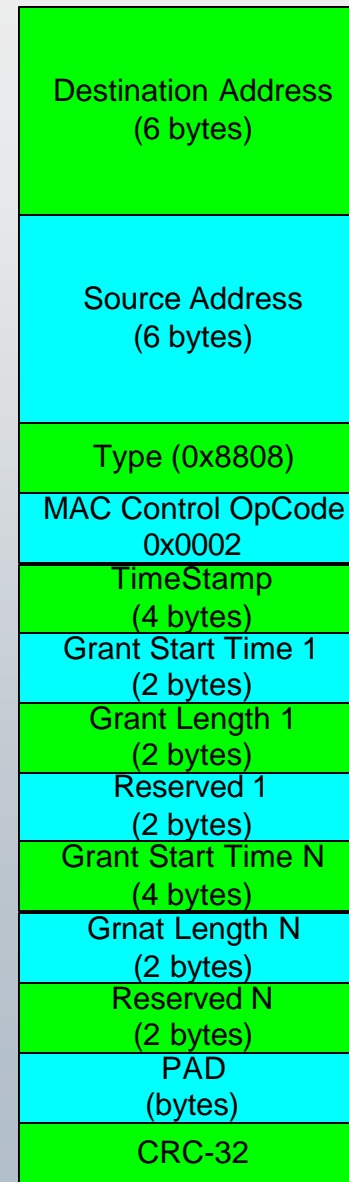
A decorative banner at the top of the slide features a city skyline at night, including the Transamerica Pyramid and a bridge, set against a blue and white gradient background.

- ✓ Fixed Frame Format – no Type,Length,Value (TLV)
 - Simple to decode in hardware
 - All messages are identical in nature
- ✓ No optional/vendor specific message fields
 - Makes interoperability difficult
 - All field must be defined before we have a standard
- ✓ Use MAC Address of ONU for PHY ID
 - No OAM Messaging in preamble (to make room for 6 bytes)
 - No Registration procedure to define for assigning PHY IDs

GATE Message

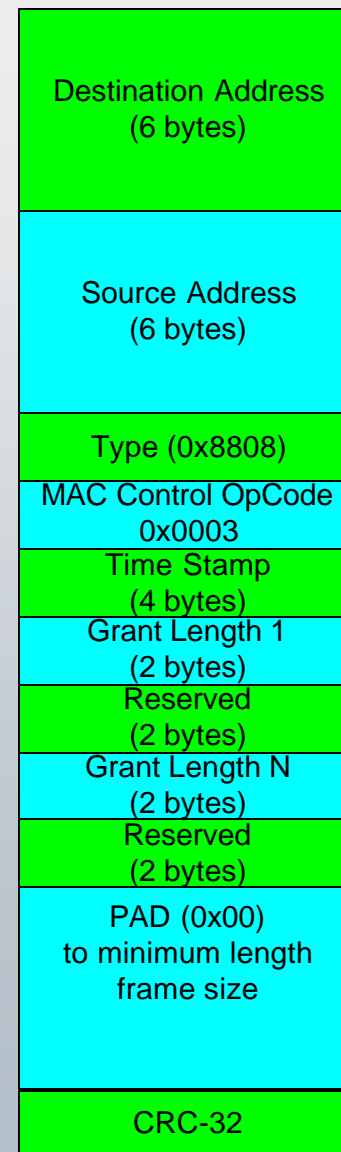


1. Destination Address
MAC address of the ONT or Multicast for Initial Registration.
2. Source Address
MAC Address of the OLT
3. Mac Control Ether Type - 0x8808
4. New Mac Control Code - 0x0002
5. Time Stamp - in byte time
6. Grant Start Time - adjusted for ranging at OLT
7. Grant Length - in bytes
8. Reserved – for future use



Request Message

1. Destination Address
MAC address of the OLT.
2. Source Address
MAC address of the ONT.
3. Mac Control Ether Type -
0x8808
4. New MAC Control Code -
0x0003
5. Time Stamp – in byte time
6. Grant Length – in bytes
7. Reserved – for future use



Preamble Message

SOP 1 byte	ONU PHY ID 6 bytes	Match 1 bit	CRC 6 6 bits	Parity 1 bit
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- ✓ ONU PHY ID
 - learned at registration from ONU's MAC Address
 - maps to service interface at MAC Control
 - may be multicast
- ✓ Match bit
 - ONU drops on PHY ID equal to ONU's MAC Address (Shared emulation);
 - ONU drops on PHY ID not equal to ONU's MAC Address (P2P emulation)
- ✓ CRC 6 – X^6+X+1 provides coverage over ONU PHY ID and Match bit
- ✓ Parity – provides even parity. This allows for correction and multibit error detection with the CRC6