



Summary of EPON TC and MAC Approaches

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Outline

- **Protocol Stack**
- **Classification of TC Sublayer**
- **OAM (Control & Management Plane)**
- **For Standardization**



Protocol Stack

| Ethernet MAC (Addressing) | | | | | |
|---------------------------|-----------------------|--------------------|-----------------------|-----------------------|-------------------------|
| G.983.1 MAC | EFM MAC | EFM MAC | 802.3z MAC | 802.3z MAC | Media Access |
| G.983.1 TC | G.983.1 TC | EFM TC | G.983.1 TC | EFM TC | |
| (a) | (b) | (c) | (d) | (e) | |



Protocol Stack (cont.)

Characteristics of each combination

(a) G.983.1 MAC+G.983.1 TC (APON)

- Fixed Specification
- Expensive

(b) EFM MAC+G.983.1 TC

- Short term for Specification
- Expensive, QoS

(c) EFM MAC+EFM TC

- Flexible solution
- QoS, Security, OAM

(d) 802.3z MAC+G.983.1 TC

- Short term for Specification, Simple solution
- Expensive

(e) 802.3z MAC+EFM TC

- Security, OAM



Classification of TC Sublayer

| Protocol | | With Ranging | Without Ranging |
|-------------------------------|-------------------|----------------|-----------------|
| (Length) | | | |
| APON (Slot-base) | Fixed | APON TC | N/A |
| Ether (Frame-base) | Fixed | EFM TC | |
| | Variable | | |
| | Negotiable | | |



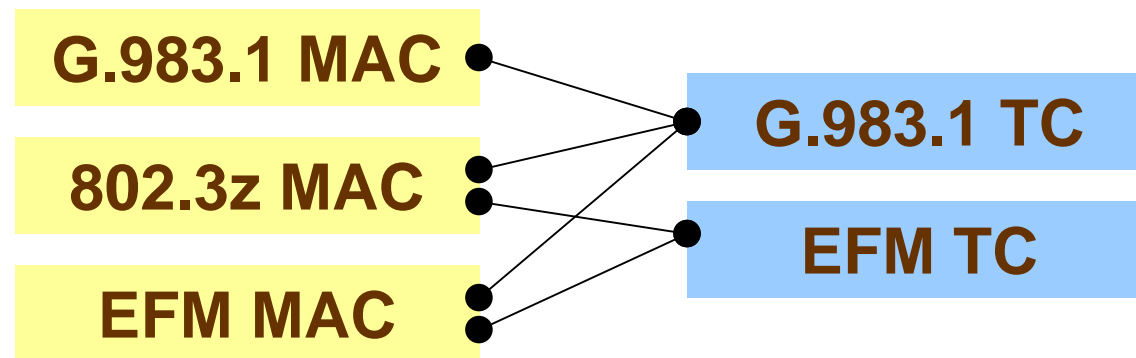
OAM

(Control & Management Plane)

- **PLOAM (TC Sublayer OAM)**
 - Frame synchronization
 - Grants transmission
 - OAM related alarms and threshold-crossing alerts transmission
- **EFM MAC Sublayer OAM**
 - Functionality such as F4 and F5 OAM in APON
- **OMCI**
 - Configuration management
 - Fault management
 - Performance management
 - Security management

For Standardization

- Which combination of TC and MAC protocol is best?



- Need to study which OAM is necessary.