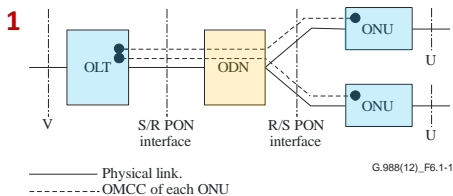


G.988 ONU Management and Configuration Interface

- The OMCI is the recommended way to manage ONU equipment via the OLT, and is the key to ONU interoperability
- Support for ONU configuration, fault reporting, performance monitoring, and security in an extensible manner
- Over 341 managed entities and their relationships defined covering a wide range of ONU services and interfaces
- Defines a message set and message exchanges for all OMCI functions, allowing for easier implementation
- Alternative management methods are supported, as well as extra features such as protection, bonding, and more



2 9.1.1 ONU-G

This ME represents the ONU as equipment. The ONU automatically creates an instance of this ME. It assigns values to read-only attributes according to data within the ONU itself. This ME has evolved from the ONT-G of [ITU-T G.984.4].

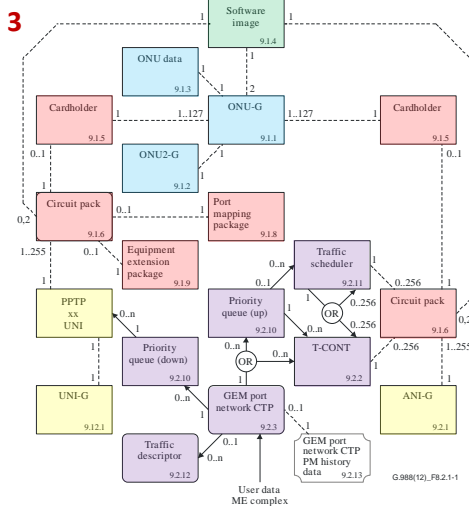
Relationships

In ITU-T GTC based PON applications, all other MEs in this Recommendation are related directly or indirectly to the ONU-G entity.

Attributes

Managed entity ID: This attribute uniquely identifies each instance of this ME. There is only one instance, number 0. (R) (mandatory) (2 bytes)

Vendor ID: This attribute identifies the vendor of the ONU. It is the same as the four most significant bytes of the ONU serial number as specified in the respective transmission convergence (TC) layer specification. (R) (mandatory) (4 bytes)



4

Field	Byte	8	7	6	5	4	3	2	1	Comments
Transaction correlation identifier	1									
Message type	3	0	1	0						DB = 0, AR = 1, AK = 0 bits 5-1: action = create
Device identifier	4	0	0	0	0	1	0	1	1	Extended OMCI = 0x0B
Managed entity identifier	5									Entity class
	6									
	7-8									Entity instance
Message contents length	9									Size of message contents field, bytes
Message contents	1									Value of first set-by-create attribute, NOT the ME ID (size depending on the type of attribute)
	1									...
	-									Value of last set-by-create attribute
	n									Message integrity check, 4 bytes
MIC										

1. ITU-T G.988 – ONU management and control interface (OMCI) specification

Describes everything about how an optical line terminal (OLT) equipment can manage its subtending optical network units (ONUs). An important feature of the OMCI is that the OLT acts as a proxy for all of its ONUs. In this way, the element management system only needs to manage one OLT rather than 4000 ONUs. This greatly improves scalability. The basic connectivity of the OMCI is a one-to-one connection between each ONU and its representation in the OLT. The OLT maintains a copy of each ONU's Management Information Base (MIB), and one of the tasks of the OMCI is to synchronize the MIBs. Because the OLT has this MIB, an ONU can be pre-provisioned even before it is attached to the PON or equipped with new line-cards. This expedites deployment.

2. Managed entity (ME)

The basic data unit in the OMCI is the

managed entity (ME). Every ME instance has a unique combination of ME-type and an ME-ID. Some MEs are created by the ONU by virtue of what functions and interfaces it has. Others are created by the OLT to establish services. Some MEs have alarms to signal specific events occurring in the ONU. Some ME's have test actions associated with them to allow the OLT to run functional tests on the ONU. Each ME contains up to 16 attributes, each of which has certain read, write, and set-by-create properties. Many attributes are tied to a particular service configuration value or performance monitoring counter. Others are pointers that indicate relationships between the MEs. Attributes can also have threshold crossing alarms. The original attribute is limited to 25 bytes, but this has been extended in several ways. Table attributes are also supported to provide even larger storage capabilities.

3. Managed entity (ME) relationship

The MEs in an ONU are interconnected to

indicate their relationship. Most of these associations are explicit pointers, but some are implicit and based on the ME-IDs. There are several major ME relationship groups, the ONU core and the Layer 2 bridging being very central to how an ONU creates connections and manages traffic. In general, there is a ME relationship group for each kind of UNI, and then these UNIs connect into the bridging complex which in turn connects into the ONU core. By constructing this sort of connection, a user service is defined.

4. Message definitions

The detailed messages are defined by the OMCI as the ONU management and control channel protocol specification. This defines all the messages that can be sent between the OLT and ONU to the bit and byte level, as well as the specific interactions (the sequence of messages to cause a particular outcome).

