

ITU-T G.984.3

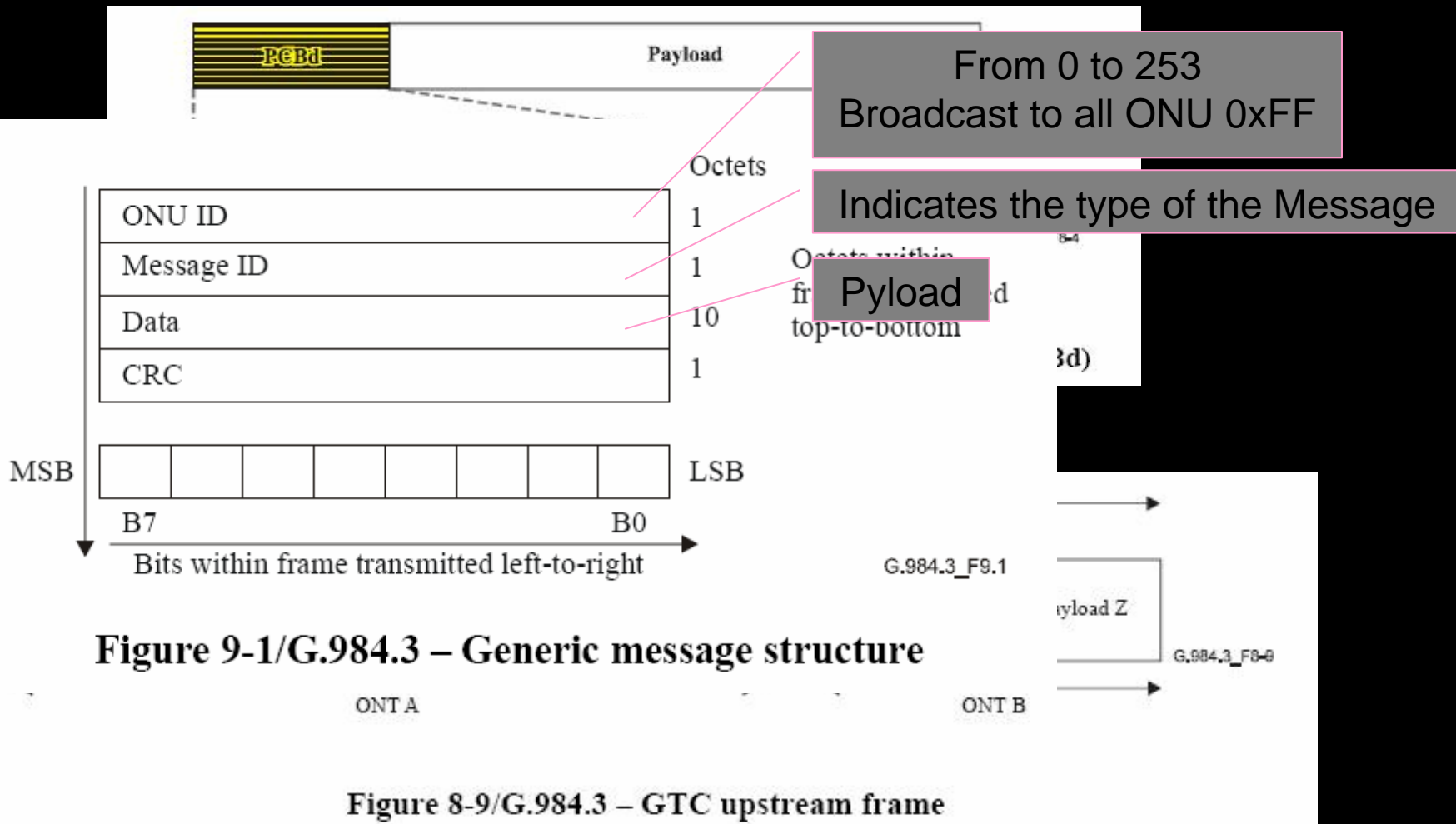
Ch.9,10,11

2005.11.02

Convey Information

- Embedded OAM channels – in clause 8
- PLOAM (physical layer) messages
- OAM info. carrying OMCI is transported over dedicated GEM channel or dedicated ATM VPI/VCI. – in clause 14

PLOAM format

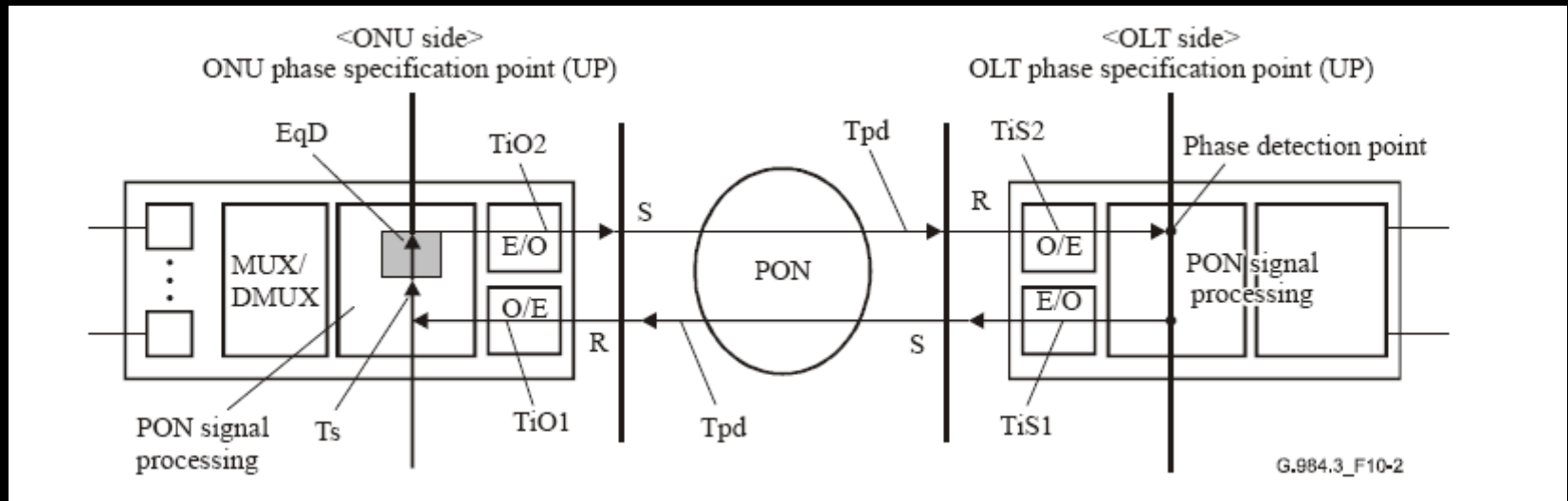


From 0 to 253
Broadcast to all ONU 0xFF

Indicates the type of the Message

Octets within Payload from top-to-bottom

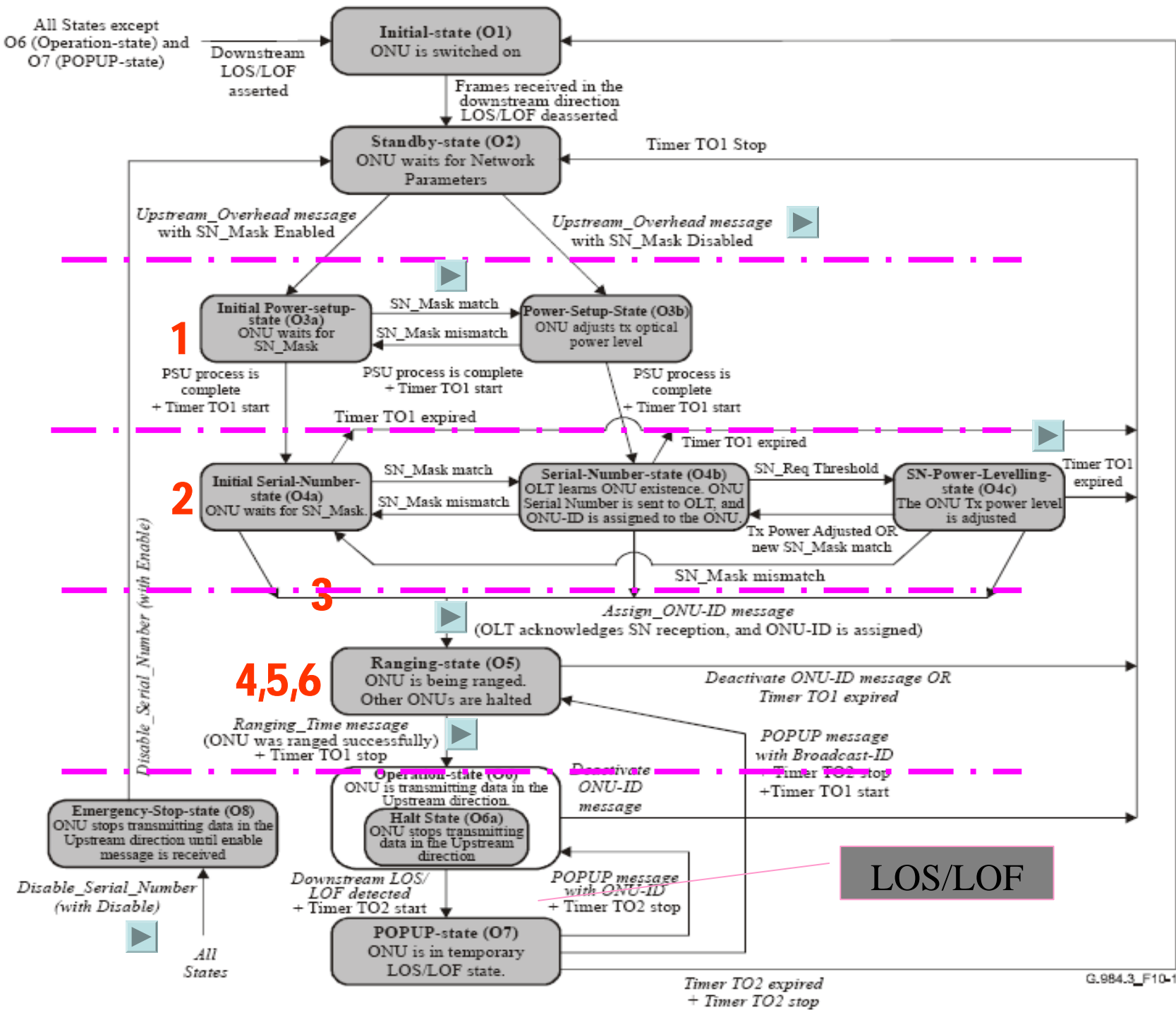
Control Messages



Overall activation procedure

1. The ONU adjusts the transmission optical power level based on OLT requirement.
2. The OLT discovers the Serial Number of a new connected ONU.
3. The OLT assigns an ONU-ID to the ONU.
4. The OLT measures the arrival phase of the upstream transmission from the ONU.
5. The OLT notifies the ONU of the equalization_delay.
6. The ONU adjusts the transmission phase to the notified value.

All States except O6 (Operation-state) and O7 (POPUP-state)



9.2.3.1 Upstream_Overhead message

Upstream_Overhead message		
Octet	Content	Description
1	11111111	Broadcast message to all ONUs.
2	00000001	Message identification "Upstream_Overhead".
3	ggggggggg	ggggggggg = Number of guard bits.
4	xxxxxxxxx	xxxxxxxxx = Number of type 1 preamble bits. Type 1 preamble bits contain the 'all ones' pattern. This may be set to zero.
5	yyyyyyyyy	yyyyyyyyy = Number of type 2 preamble bits. Type 2 preamble bits contain the 'all zeroes' pattern. This may be set to zero.
6	cccccccc	cccccccc = Pattern to be used for Type 3 preamble bits (Note 1).
7	bbbbbbbbb	Data to be programmed in delimiter byte 1 (Notes 2, 3).
8	bbbbbbbbb	Data to be programmed in delimiter byte 2.
9	bbbbbbbbb	Data to be programmed in delimiter byte 3.
Octet	Content	Description
10	xxemsspp	<p>xx = Reserved:</p> <p>e = Status of pre-Equalization mechanism: "0" = No pre-equalization delay, "1" = Use pre-equalization delay given below.</p> <p>m = Status of SN_Mask mechanism: "0" =SN_Mask disabled, "1" = SN_Mask enabled.</p> <p>ss = Max number of extra SN-transmissions sent in response to a single SN-request. For example, ss = 10 means an ONU will send 3 SN-transmissions when responding to a SN-request.</p> <p>Default ONU transmit power level mode:</p> <p>pp = "00" – Mode 0: Normal.</p> <p>pp = "01" – Mode 1: Normal – 3 dB.</p> <p>pp = "10" – Mode 2: Normal – 6 dB.</p> <p>pp = "11" – reserved.</p>
11	dddddddd	MSB of pre-assigned equalization delay (32 byte units).
12	dddddddd	LSB of pre-assigned equalization delay (32 byte units).

9.2.3.2 Serial_Number_Mask message

Serial_Number_Mask message		
Octet	Content	Description
1	11111111	Broadcast message to all ONUs
2	00000010	Message identification "Serial_Number_Mask"
3	nnnnnnnn	Number of valid bits, count started from LSB of byte 4 counting up to the MSB of byte 11
4	abcdefgh	Serial number octet 1
5-10	
11	stuvwxyz	Serial number octet 8
12	Unspecified	

NOTE – This message is optional at the OLT if 'Random delay' method is used. The ONU must be able to interpret this message.

9.2.3.3 Assign_ONU-ID message

Assign_ONU-ID message		
Octet	Content	Description
1	11111111	Broadcast message to all ONUs
2	00000011	Message identification "Assign_ONU-ID"
3	pppppppp	ONU-ID.
4	abcdefgh	Serial number byte 1
5-10	
11	stuvwxyz	Serial number byte 8
12	Unspecified	

NOTE – This message is used to assign an ONU-ID to a physical ONU. Later, Alloc-IDs are assigned to each T-CONT of the specific ONU according to its ONU-ID.

9.2.3.4 Ranging_Time message

Ranging_Time message		
Octet	Content	Description
1	ONU-ID	Directed message to one ONU
2	00000100	Message identification "Ranging_Time"
3	0000000b	'0' – Main Path EqD '1' – Protection path EqD
4	dddddddd	MSB of delay
5	dddddddd	
6	dddddddd	
7	dddddddd	LSB of delay
8-12	Unspecified	

NOTE 1 – The unit of the equalization delay parameter is bits.

NOTE 2 – Both the main path EqD and the protection path EqD can be assigned to the ONU using this message.

9.2.3.16 Change Power Level (CPL) message

CPL message		
Octet	Content	Description
1	ONU-ID or 11111111	Directed message to one ONU or all ONUs. As a broadcast to all ONUs, ONU-ID = 0xFF.
2	00010000	Message identification "Change Power level"
3	000000ID	ID = '10': Increase ONU Transmitted power ID = '01': Decrease ONU Transmitted power ID = '00' or '11': No Action
4-12	Unspecified	

9.2.3.6 Disable_serial_number message

Disable_Serial_Number message		
Octet	Content	Description
1	11111111	Broadcast message to all ONU.
2	00000110	Message identification "Disable_Serial_Number".
3	Disable/Enable	0xFF: The ONU with this serial number is denied upstream access. 0x0F: All ONUs which were denied upstream access can participate in ranging process. The content of bytes 4-11 are irrelevant. 0x00: The ONU with this serial number can participate in the ranging process.
4	abcdefgh	Serial number byte 1
5-10	
11	stuvwxyz	Serial number byte 8
12	Unspecified	

States of the OLT

- Common-part
 - A common function in one line-interface.
- Individual-ONU-dealing-part
 - Each ONU supported in one line-interface.

Common-part

	Serial number acquisition standby state (OLT-COM1)	Serial number acquisition state (OLT-COM2)	RTD measurement standby state (OLT-COM3)
'New' ONU from OpS system	⇒OLT-COM2	–	–
'Missing' ONUs (LOS state) alarm	⇒OLT-COM2	–	–
Periodic Serial number acquisition cycle time-out	⇒OLT-COM2	–	–
Received valid Serial_Number transmission for 'new' ONU		Extract SN Allocate free ONU-ID	–
Received valid Serial_Number transmission for 'missing' ONU		Extract SN Re-assign the ONU-ID	–
Received Unexpected Serial_Number transmission		Deactivate ONU	
No valid Serial_Number transmission is received		⇒OLT-COM3	
Serial number acquisition cycle limit is reached		⇒OLT-COM3	
Delay measurement complete			⇒OLT-COM1

Individual-ONU-dealing-part

	Initial state (OLT-IDV1)	Delay measurement state (OLT-IDV2)	Operating state (OLT-IDV3)	POPUP state (OLT-IDV4)
Delay measurement start order (n)	Notification of Delay measurement start (n). ⇒ OLT-IDV2	—	—	—
Delay measurement complete (n)	—	Send Ranging_time message 3 times. Notification of Delay measurement end (n). ⇒ OLT-IDV3	—	—
Delay measurement abnormal stop (n)	—	Send Deactivate_ONU-ID message 3 times. Notification of Delay measurement end (n). ⇒ OLT-IDV1	—	—
Detect of LOS(n), LOF(n)	—	—	Notification of Transmission arrival test start (n). ⇒ OLT-IDV4	—
POPUP test success (n)	—	—	—	Send POPUP (with ONU-ID) message 3 times. Notification of POPUP test end (n). ⇒ OLT-IDV3
POPUP test fail (n)	—	—	—	Send Deactivate_ONU-ID message 3 times. Notification of POPUP test end (n). ⇒ OLT-IDV1

