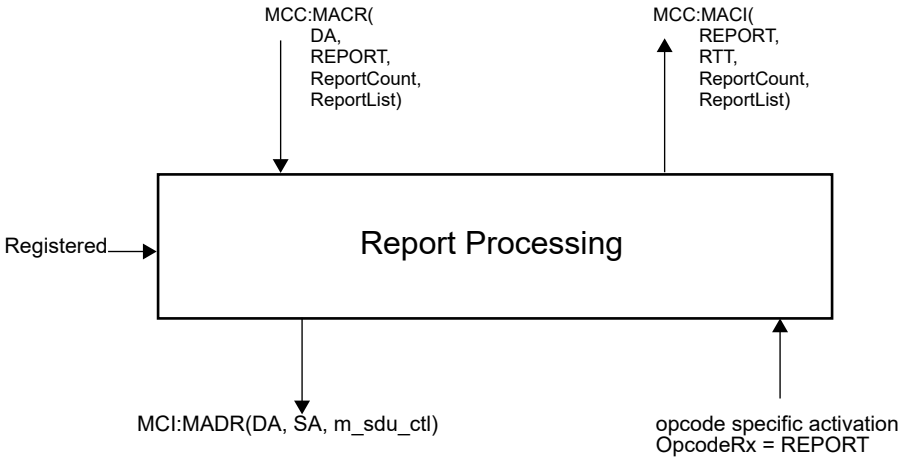
144.3.4 Report Processing

The Report Processing functional block has the responsibility of dealing with queue report generation and termination in the network. Reports are generated by higher layers and passed to the MAC Control sublayer by MAC Control clients. Status reports are used to signal bandwidth needs as well as for arming the OLT watchdog timer.

REPORT MPCPDUs shall be generated periodically, even when no request for bandwidth is being made. This keeps a watchdog timer in the OLT from expiring and deregistering the ONU. For proper operation of this mechanism the OLT shall grant the ONU periodically.

The Report Processing functional block, and its MPCP protocol elements are designed for use in conjunction with an IEEE 802.1P capable bridge.



Instances of Service Interface:
MCI = interface to MAC Control multiplexer
MCC = interface to MAC Control client

Figure 144–20—Report Processing service interfaces

144.3.4.1 Constants

None.

144.3.4.2 Variables

BEGIN
TYPE: Boolean
This variable is used when initiating operation of the functional block state diagram. It is set to true following initialization and every reset.

DataRx
This variable is defined in 144.2.2.3.

DataTx
This variable is defined in 144.2.2.3.

m_sdu_ctl
This variable is defined in 144.2.2.3.

mpcp_timeout
TYPE: 32-bit unsigned integer
This variable represents the maximum allowed interval of time between two MPCPDU messages. Failure to receive at least one frame within this interval is considered a fatal fault and leads to deregistration. This variable is expressed in the units of 1 EQ.
VALUE: 0x174876E8 (1 s, default value)

OpcodeRx
This variable is defined in 144.2.2.3.

Registered
This variable is defined in 144.2.2.3.

ReportTimeout
TYPE: 32 bit unsigned
This variable represents the maximum allowed interval of time between two REPORT messages generated by the ONU, and it is expressed in the units of 1 EQ.
VALUE: 0x012A05F2 (50 ms, default value)

144.3.4.3 Functions

None.

144.3.4.4 Timers

report_periodic_timer
ONUs are required to generate REPORT MPCPDUs with a periodicity of less than ReportTimeout value. This timer counts down time remaining before a forced generation of a REPORT message in an ONU.

mpcp_timer
This timer is defined in 144.3.3.4.

144.3.4.5 Messages

MCI:MADR (DA, SA, m_sdu)
The service primitive is defined in 2.3.2.

MCC:MACR(DA, REPORT, ReportCount, ReportList)
This service primitive is used by a MAC Control client to request the Report Process at the ONU to transmit a queue status report. This primitive may be called at variable intervals, independently of the granting process, in order to reflect the time varying aspect of the network. This primitive uses the following parameters:

DA:	Multicast MAC Control address as defined in Annex 31B.
REPORT:	Opcode for REPORT MPCPDU as defined in Table 31A–1.
ReportCount:	The number of queue status report entries (*Queue Length #n* and *LLID #n* tuples, see 144.3.6.2) to be inserted into a REPORT MPCPDU. The *ReportCount* value ranges from 0 to a maximum of 7. The value of *ReportCount* is mapped into

Number of Non-empty Queues (LLIDs) field in the REPORT MPCPDU.

ReportList: This array consists of 40-bit unsigned integers, each comprising a concatenation of a 16-bit unsigned integer representing the value of *LLID #n* field and a 24-bit unsigned integer representing the value of *Queue Length #n* field in the REPORT MPCPDU. There are *ReportCount* of such 40-bit unsigned integers in the *ReportList* array.

MCC:MACI(REPORT, RTT, ReportCount, ReportList)

The service primitive is issued by the Report Process at the OLT to notify the MAC Control client and higher layers the queue status of the MPCP link partner. This primitive may be called multiple times, in order to reflect the time–varying aspect of the network. This primitive uses the following parameters:

REPORT: Opcode for REPORT MPCPDU as defined in Table 31A–1.

RTT: This parameter holds an updated round trip time value that is recalculated following each REPORT message reception.

ReportCount: The number of queue status report entries (*Queue Length #n* and *LLID #n* tuples, see 144.3.6.2) retrieved from a REPORT MPCPDU. The *ReportCount* value ranges from 0 to a maximum of 7. The value of *ReportCount* is mapped from the *Number of Non-empty Queues (LLIDs)* field in the REPORT MPCPDU.

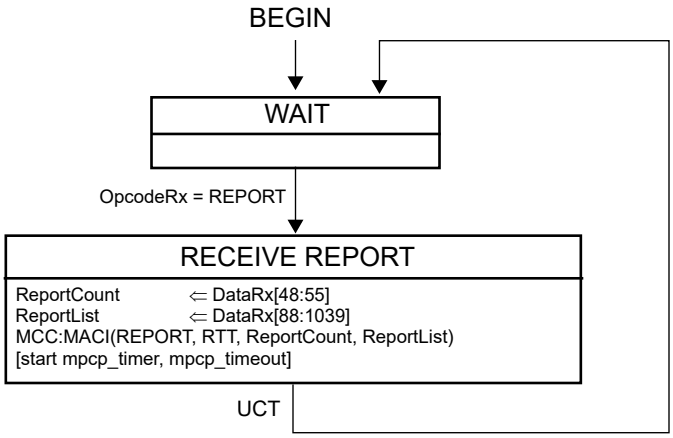
ReportList: This array consists of 40-bit unsigned integers, each comprising a concatenation of a 16-bit unsigned integer representing the value of *LLID #n* field and a 24-bit unsigned integer representing the value of *Queue Length #n* field in the REPORT MPCPDU. There are *ReportCount* of such 40-bit unsigned integers in the *ReportList* array.

OpcodeSpecificFunction(Opcode)

Functions exported from opcode specific blocks that are invoked on the arrival of a MAC Control message of the appropriate opcode.

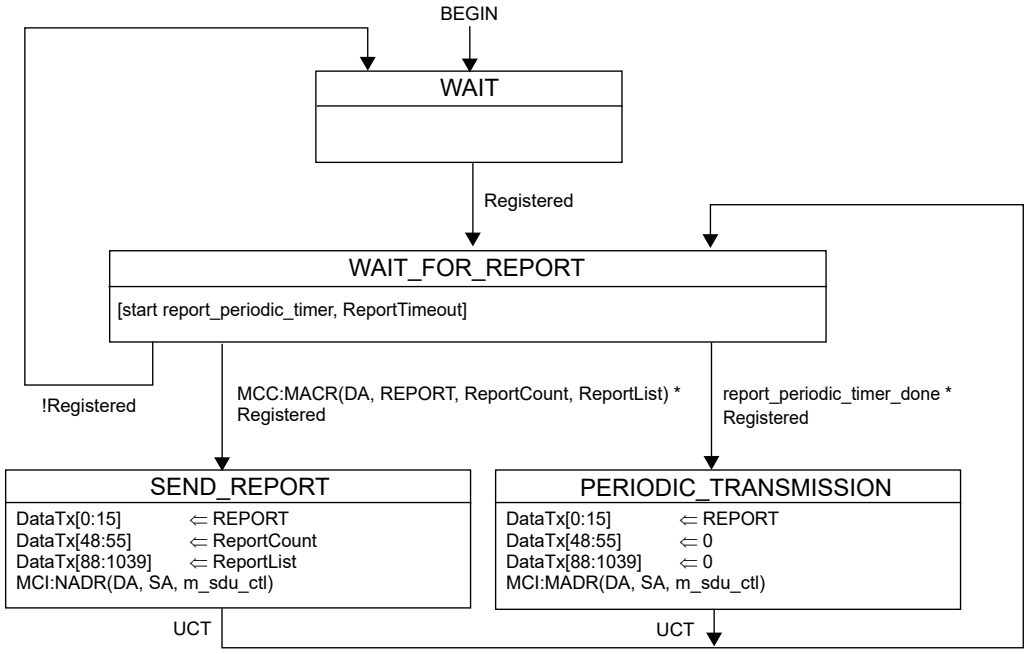
144.3.4.6 State diagrams

The Report Process in the OLT shall implement the Report Processing state diagram as shown in Figure 144–21. The Report Process in the ONU shall implement the Report Processing state diagram as shown in Figure 144–22. Instantiation of state diagrams as described is performed for Multipoint MAC Control instances attached to PLIDs only.



Instances of Service Interface:
MCI = interface to MAC Control multiplexer
MCC = interface to MAC Control client

Figure 144–21—Report Processing state diagram at OLT



Instances of Service Interface:
MCI = interface to MAC Control multiplexer
MCC = interface to MAC Control client

Figure 144–22—Report Processing state diagram at ONU