Appendix II / G.994.1 - Provider Code contact Information - Stet.

Appendix III / G.994.1 - support for legacy DMT-based devices - not applicable

Appendix IV / G.994.1 - Procedure for the assignment of additional G.994.1 parameters - not applicable

Appendix V / G.994.1 - Rules for code point table numbering - not applicable

Appendix VI / G.994.1 - Bibliography

61.3.12 PHY PMI AGGREGATION – remote access of ~~remote_discovery_register~~PMI Aggregation registers

As the CO-subtype accesses ~~the remote_discovery_register~~ PMI Aggregation registers (i.e., remote_discovery-register and PMI_Aggregate_register) in the CPE-subtype prior to training and establishment of the PMD-to-PMD link, it is performed using G.994.1 handshake messages.

61.3.12.1 Remote_discovery_register

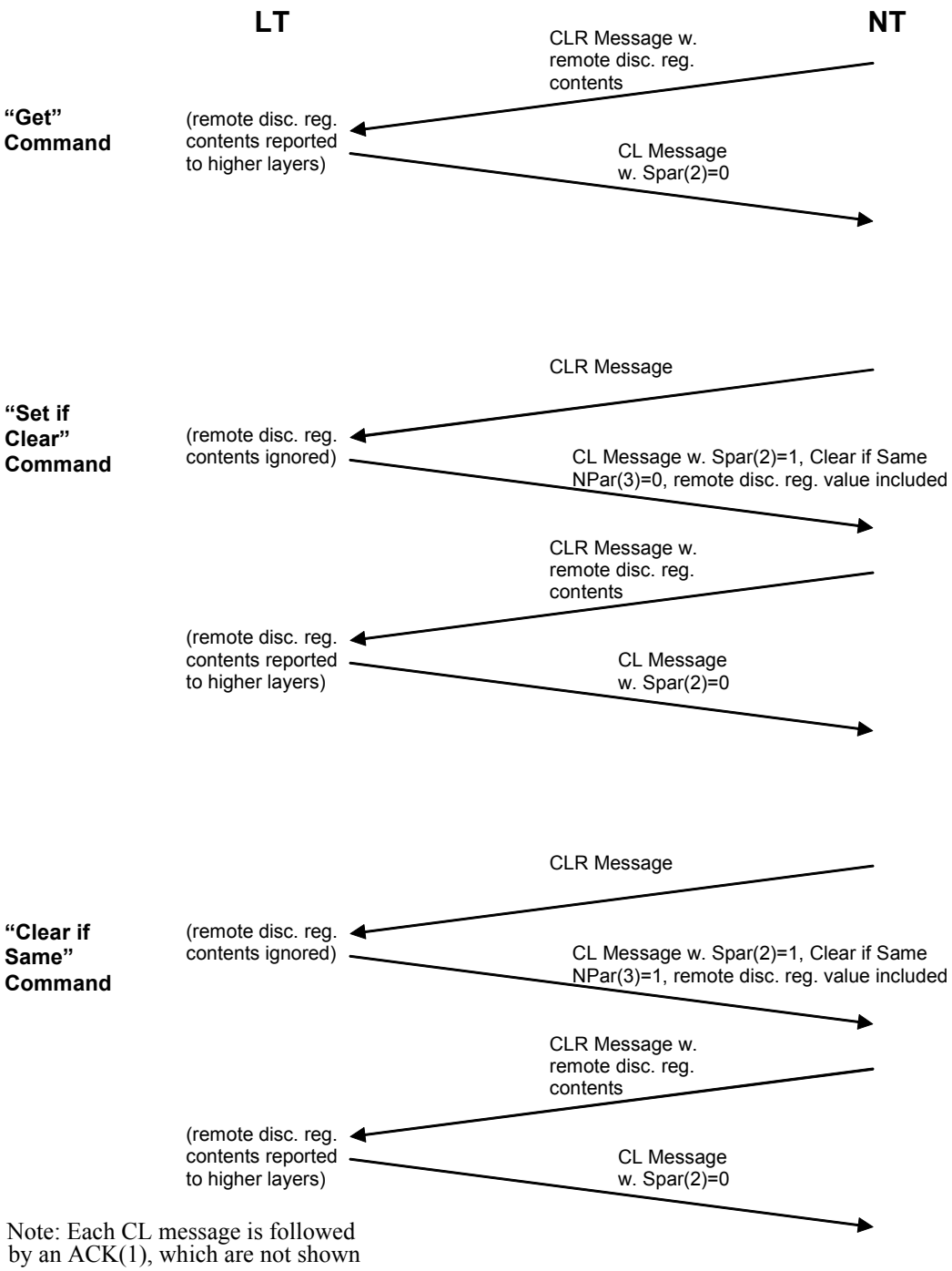
2BASE-~~TL~~ TL-R and 10PASS-TS-~~TS~~ R PHY's shall assert the PMI Aggregation Discovery SPar(2) bit in all G.994.1 CLR messages, if and only if its local PAF_available bit is set. CPE-subtype's shall place the contents of the remote_discovery_register in the corresponding NPar(3) bits in the outgoing CLR message, with the Clear if Same NPar(3) set to zero.

In response to a "Get" command, the CO-subtype shall perform a G.994.1 capabilities exchange with the CPE-subtype. The contents of the NPar(3) remote_discovery_register bits in the CLR message received from the CPE-subtype shall be reported as the result. The CL message sent by the CO-subtype in response to the CLR shall have the PMI Aggregation Discovery SPar(2) bit set to zero.

In response to a "~~Get~~Set if Clear" command, the CO-subtype shall perform ~~a~~ two back-to-back G.994.1 capabilities ~~exchange~~ exchanges with the CPE-subtype. The contents of the NPar(3) remote_discovery_register bits in the first CLR message received from the CPE-subtype shall be ignored. The CL message sent by the CO-subtype in response to this first CLR shall have the PMI Aggregation Discovery SPar(2) bit set to one, the Clear if Same NPar(3) bit set to zero, and the NPar(3) remote_discovery_register bits set to the CO-subtype PMI Aggregation Discovery Code register. The CPE-subtype shall set the remote_discovery register to this value if it is currently clear. The contents of the NPar(3) remote_discovery_register bits in the CLR message received from the CPE-subtype during the second capabilities exchange shall be reported as the result. The CL message sent by the CO-subtype in response to ~~the~~ this second CLR shall have the PMI Aggregation Discovery SPar(2) bit set to zero.

In response to a "~~Set~~ Clear if ~~Clear~~Same" command, the CO-subtype shall perform two back-to-back G.994.1 capabilities exchanges with the CPE-subtype. The contents of the NPar(3) ~~PMI Aggregation register~~ remote_discovery_register bits in the first CLR message received from the CPE-subtype shall be ignored. The CL message sent by the CO-subtype in response to this first CLR shall have the PMI Aggregation Discovery SPar(2) bit set to one, the Clear if Same NPar(3) bit set to ~~zero~~one, and the NPar(3) ~~PMI Aggregation register~~ remote_discovery_register bits set to the CO-subtype PMI Aggregation Discovery Code register. The CPE-subtype shall ~~set~~ clear the remote_discovery register ~~to this value~~ if it is currently ~~clear~~equal to this value. The contents of the NPar(3) ~~PMI Aggregation register~~ remote_discovery_register bits in the CLR message received from the CPE-subtype during the second capabilities exchange shall be reported as the result. The CL message sent by the CO-subtype in response to this second CLR shall have the PMI Aggregation Discovery SPar(2) bit set to zero.

Figure 61–20 illustrates the relevent sequences of G.994.1 transactions.



Note: Each CL message is followed by an ACK(1), which are not shown

Figure 61–20—G.994.1 transactions for remote_discovery_register access

61.3.12.2 PMI_Aggregate_register

2BASE-TL-R and 10PASS-TS-R PHY's shall assert the PMI Aggregation SPar(2) bit in all G.994.1 CLR messages, if and only if its local PAF_available bit is set. CPE-subtype's shall place the contents of the PMI_Aggregate_register in the corresponding NPar(3) bits in the outgoing CLR message.

In response to a "~~Clear if Same~~read" command, the CO-subtype shall perform ~~two back-to-back~~ a G.994.1 capabilities ~~exchanges~~ exchange with the CPE-subtype. The contents of the NPar(3) ~~PMI Aggregation register in the first CLR message received from the CPE-subtype shall be ignored. The CL message sent by the CO-subtype in response to this first CLR shall have the PMI Aggregation Discovery SPar(2) bit set to one, the Clear if Same NPar(3) bit set to one, and the NPar(3) PMI Aggregation~~ PMI_Aggregate register bits ~~set to the CO-subtype PMI Aggregation Discovery Code register. The CPE-subtype shall clear the remote_discovery register if it is currently equal to this value. The contents of the NPar(3) PMI Aggregation register bits~~ in the CLR message received from the CPE-subtype ~~during the second capabilities exchange~~ shall be reported as the result. The CL message sent by the CO-subtype in response to ~~this second~~ the CLR shall have the PMI Aggregation ~~Discovery~~ SPar(2) bit set to zero.

In response to a "write" command, the CO-subtype shall perform two back-to-back G.994.1 capabilities exchanges with the CPE-subtype. The contents of the NPar(3) PMI_Aggregate_register bits in the first CLR message received from the CPE-subtype shall be ignored. The CL message sent by the CO-subtype in response to this first CLR shall have the PMI Aggregation SPar(2) bit set to one and the NPar(3) PMI_Aggregate_register bits set to the CO-subtype PMI Aggregation Code register. The CPE-subtype shall set its PMI_Aggregate_register to this value. The contents of the NPar(3) PMI_Aggregate_register bits in the CLR message received from the CPE-subtype during the second capabilities exchange shall be reported as the result. The CL message sent by the CO-subtype in response to this second CLR shall have the PMI Aggregation SPar(2) bit set to zero.

61.3.12.3 Timing and preferred transactions

This subclause is applicable to devices in which 10PASS-TS and/or 2BASE-TL are the only G.994.1-initiated PHY's implemented and enabled. Start-up procedures for devices which include additional G.994.1-initiated modes of operation are outside the scope of this standard.

After reset, "-O" subtype devices shall be in G.994.1 state C-SILECT1 and "-R" subtype devices shall be in state R-SILENT0. The "-O" device initiates G.994.1 startup procedures by transmitting C-TONES in response to the PMA/PMD link control bit being set to 1 (Table 45-4), or in response to γ-interface signals write_remote_aggregation_reg, write_remote_discovery_reg, clear_remote_discovery_reg, read_remote_aggregation_reg, or read_remote_discovery_reg. At the conclusion of G.994.1 startup, the "-R" device shall begin G.994.1 transactions by transmitting an MR message.

If the G.994.1 session was initiated by the PMA/PMD link control bit (signifying that the link is to be brought up), then the "-O" device shall respond with an MS message specifying the configured mode of operation.

If the G.994.1 session was initiated in response to PMI Aggregation register γ-interface signals, then the "-O" device shall respond with an REQ-CLR message . This shall then be followed by one or two capability exchanges as described in the previous two subclauses. Following the final message of the final capabilities exchange (i.e., an ACK(1)), the CPE device once again sends an MR message. If neither the PMA/PMD control bit nor the PMI Aggregation γ-interface signals or activated within the next 0.5 seconds, the "-O" shall transmit an MS message signifying a G.994.1 cleardown.