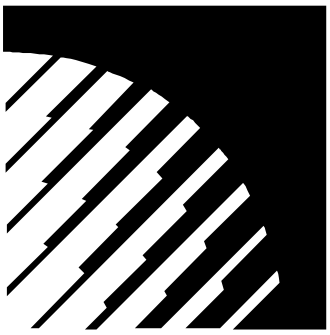

# The ATM Forum
## Technical Committee

# PNNI V1.0 Errata and PICS

**af-pnni-0081.000**

**May 1997**

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February, 1997

## 1.0 Introduction

This addendum covers items that are considered to be "in error" in the PNNI v1.0 Specification[1] and the Addendum (Soft PVC MIB)[2] as they were approved. This list contains known errors and their corrections as of February 14, 1997. Also included in this document are two new Management Information Bases (MIBs) to account for the corrections and a Protocol Implementation Conformance Statement (PICS) Proforma, which covers the PNNI v1.0 Specification and the corrections listed herein.

Neither the PNNI v1.0 Specification nor the Addendum (Soft PVC MIB) should be used without including the corrections to the known errors contained in this addendum.

## 2.0 References

[1] ATM Forum Private Network-Network Interface Specification, Version 1.0, af-pnni-0055.000

[2] ATM Forum Private Network-Network Interface Specification, Version 1.0 Addendum (Soft PVC MIB), af-pnni-0066.000

3.0 **Items**

1) Global; change all occurrences of the phrase "Phase 1" to "PNNI 1.0".

2) 5.3.6, second paragraph, second sentence; change reference, "A5.2" to "A5.3".

"At the UNI, including when using ILMI address registration (in the ILMI object atmfAddressOrgMemberScope), the scope may be indicated by one of fifteen levels of organizational scope, as defined in Section A5.~~2~~3 of UNI Signalling 4.0."

3) 5.5.4.1.2, Table 5-3: ATM User Cell Rate/ATM Traffic Descriptor; add the following note after the Table.

"Note 2 - For the ABR service category for SVCC-based RCCs, the Minimum Cell Rate is set to zero."

4) 5.5.4.1.3, Table 5-4: Broadband Bearer Capability; add the following note after the Table.

"Note - UBR is indicated using nrt-VBR codepoint with the Best effort indicator set in the ATM traffic descriptor information element."

5) 5.5.4.1.8; Table 5-8: Called Party Number (ATM End System Address) incorrectly indicates a Length of Called Party of 20 octets. This number should be 21. The following is the replacement table with the correction.

**Table 5-8: Called Party Number (ATM End System Addresses)**

| | |
|---|---|
| Coding Standard | 0 |
| I.E. Instruction | 0 |
| Length of Called Party | ~~20~~ 21 |
| Type of Number | 0 (for Unknown) |
| Address/numbering plan identification | 2 (binary 0010)<br>(for ATM end system address) |

6) 5.5.4.1.10; replace current text with the following.

"Normal PNNI signalling procedures for the inclusion of the Connection identifier information element are followed."

7) 5.5.4.2.3; delete entire section.

"~~**5.5.4.2.3 Connection Identifier**~~

~~This information element indicates what VPI/VCI values have been assigned as specified in Section 6.5.2.2.~~"

8) 5.5.6.3, B.1; delete this item.

"~~B.1 If ThisLGN's node ID is numerically smaller than the neighboring LGN's node ID, then ThisLGN shall continue to use all SVCCs. Hello packets must be transmitted on all SVCCs. Database exchange packets and PTSPs may be transmitted on any of the SVCCs. Packets received on any of the SVCCs are acted on independent of which SVCC they were received on. Note that this implies that there is only a single LGN Hello FSM for multiple SVCCs.~~"

9) 5.5.6.3, C.1; replace the entire sentence with the following text.

"ThisLGN attempts to flush all of the PTSEs that it originated by transmitting new instances with remaining lifetime ExpiredAge to all neighboring peers in states Exchanging, Loading, or

Full. ThisLGN need not wait for PTSE acknowledgements from the neighboring peers before proceeding with the next step and then terminating itself.All PTSEs originated by ThisLGN shall be flushed."

10) 5.5.6.3, D.1; change the second occurrence of LinkDown with BadNeighbor and delete "timer" following RetryLGNSVCTimer.

"D.1 If ThisLGN receives a RELEASE message with cause code number 53 "call cleared due to change in PGL", that relates to a particular SVCC to neighbor node X, then the respective higher level link(s) shall be removed by carrying out the following actions. The event LinkDown shall be triggered in the SVCC-based RCC Hello FSM to upnode X (see Section 5.6.3.1), and the LinkDown BadNeighbor event shall be triggered in all associated LGN horizontal link Hello FSMs (see Section 5.6.3.2). Start the RetryLGNSVCTimer timer with value RetryLGNSVCTimeout."

11) 5.5.6.3, D.2; modify this step as follows. add the word, "signalling", before the word, "error", add step D.3 with new text, and make the last statement of D.2 step D.4.

"D.2 Else, if the cause code indicates that the call was cleared due to a signalling error, and if upnode X is still being advertised as the destination of uplinks originated by one or more border nodes, and another SVCC is not opened to X, and ThisLGN has a numerically larger node ID than upnode X, then attempt to re-establish this SVCC to upnode X immediately and go to Step A.6.

D.3 Else, if upnode X is still being advertised as the destination of uplinks originated by one or more border nodes, and another SVCC is not opened to X, and this LGN has a numerically larger node ID than upnode X, then start the RetryLGNSVCTimer with initial value RetryLGNSVCTimeout.

D.4 Otherwise do nothing."

12) 5.6.3.1, bullet #4; delete the state, "Down" from the first sentence. The SVCIntegrityTimer is disabled in the Down state. add text for cases when Down state is allowed. add specific cause code to release of SVCC. add clarification for LGN calling party released SVCC.

"4. An SVCIntegrityTimer is set in the Down, Attempt and One-way states, and in some cases in the Down state (see Sections 5.6.3.1.2 and 5.6.3.1.3). If the timer expires, the SVCC-based RCC is declared down and the SVCC is released with cause #16 "normal call clearing". When the LGN that is the calling party releases the SVCC, it immediately attempts to re-establish the SVCC and follows the procedures in step A.6 of Section 5.5.6.3."

13) 5.6.3.1, bullet #5; change "ATTEMPT state" to "Attempt state". add specific cause code to release of SVCC. add additional text on RetryLGNSVCTimer. add more specific reference.

"5. For the LGN that is the called party, a HelloMismatchReceived event is handled by returning to the AttemptTTEMPT state. For the LGN that is the calling party, a HelloMismatchReceived event is handled by releasing the SVCC with cause #16 "normal call clearing" and re-establishing it, as starting the RetryLGNSVCTimer with value RetryLGNSVCTimeout. When the RetryLGNSVCTimer expires, the procedures described in Section 5.5.6.3 are followed. The situation should also be logged and trapped to network management."

14) 5.6.3.1.1; delete first sentence in this section.

"There is a single hello data structure for each SVCC-based RCC to a neighboring node."

15) 5.6.3.1.2, second paragraph, first sentence; change "establishment is initiated" to "becomes active".

"At the calling node, the SVCIntegrityTimer is set 1) when the

SVCC becomes active ~~establishment is initiated~~, and 2) whenever the state machine enters the Attempt state or the OneWay state and the timer is not already running."

16) 5.6.3.1.2, last paragraph, first sentence; change "setup" to "SETUP", as per the convention.
"At the called node, the SVCIntegrityTimer is set when a ~~setup~~SETUP message ..."

17) 5.6.3.1.3, last paragraph; modify paragraph as indicated.
"In this event, ~~if the SVCC-based RCC Hello State machine is in the 2-WayInside state,~~ the node ~~returns to the attempt state. Note that this will cause the SVCIntegrityTimer to be started~~first sends out a Hello packet with an empty LGN Horizontal Link Extension information group (see Section 5.6.3.2). The node then returns the SVCC-based RCC Hello State machine to the Down state and starts the SVCIntegrityTimer, but does not clear the SVCC-based RCC. While in the Down state, the node must ignore received Hellos and refrain from transmitting any Hellos to the neighbor, until an uplink PTSE is received indicating the neighbor as the upnode."

18) 5.6.3.2.3, event AddInducingLink, (ii); add "aggregation of" to Note.
"(ii) Connectivity has been re-established to a border node advertising an inducing uplink(s). Note that such a connectivity recovery may affect aggregation of several uplinks and in turn may affect several horizontal link FSMs, or"

19) 5.6.3.2.3, event AddInducingLink, (iii); change "2-WayOutside" to "CommonOutside".
"(iii) A directly attached outside link to a descendant node of a neighboring peer LGN has reached the CommonOutside ~~2-WayOutside~~ state carrying the same aggregation token value as in the LGN horizontal link hello data structure."

20) 5.6.3.2.3, event DropInducingLink, (iii); add "aggregation of" to last line.
"(iii) connectivity to the border node in the child peer group that is advertising the inducing uplink(s) has been lost, and it was not the last inducing uplink for that particular Aggregation Token value. Note that such a connectivity loss may affect aggregations of several uplinks and in turn may affect several horizontal link FSMs, or"

21) 5.6.3.2.3, event DropInducingLink, (iv); change "2-WayOutside" to "CommonOutside".
"(iv) A directly attached outside link to a descendant node of a neighboring peer LGN carrying the same aggregation token value as in the LGN horizontal link hello data structure has fallen out of the CommonOutside ~~2-WayOutside~~ state, and it was not the last inducing outside link for that particular Aggregation Token value."

22) 5.6.3.2.3, event DropLastInducingLink (iii); add "aggregations of".
"(iii) connectivity to the border node in the child peer group that is advertising the last inducing uplink(s) has been lost. Note that such a connectivity loss may affect aggregations of several uplinks and in turn may affect several horizontal link FSMs, or"

23) 5.6.3.2.3, event DropLastInducingLink, (iv); change "2-WayOutside" to "CommonOutside".
"(iv) the last attached outside link to a descendant node of a neighboring peer LGN carrying the same aggregation token value as in the LGN horizontal link hello data structure has fallen out of the CommonOutside ~~2-WayOutside~~ state."

24) 5.6.3.2.4; change "FSM_ERR Should not occur." to
"FSM_ERR: Represents an internal implementation error."

25) 5.6.3.3; modify the entire section as follows.
"~~Hellos are transmitted periodically whenever the SVCC-based RCC Hello state is other than~~

Down. A single Hello timer exists per SVCC-based RCC to govern when Hellos are sent. In addition, event-triggered Hellos are sent in the following cases (subject to the hold-down timer):
- Upon every state change in the SVCC-based RCC Hello State Machine except for 1-Way Inside to 2-Way Inside or for any change to the Down state.
- Upon every state change in every LGN Horizontal Link Hello State Machine associated with the neighboring peer LGN, except for 1-Way to 2-Way (note that changes into or out of the Down state of the LGN Horizontal link Hello FSM cause event-triggered Hellos to be generated).
Any event which requires a Hello to be sent resets this Hello timer.

Additionally, there are two inactivity timers. The Inactivity timer associated with the SVCC operates exactly as in the normal Hello protocol. The Horizontal Link Inactivity Timer is started when the corresponding SVCC-based RCC Hello protocol is in the 2-WayInside state and the corresponding neighboring peer state machine reaches Full state. The Horizontal Link Inactivity Timer is reset each time an LGN Horizontal Link Extension IG is processed, since this IG describes all horizontal links to this neighbor. Note that these LGN Horizontal Link Extension IGs are only processed only when the SVCC-based RCC Hello protocol is in the 2-WayInside state and the corresponding neighboring peer state machine is in Full state. The Horizontal Link Inactivity Timer is stopped when the last LGN Horizontal Link Hello FSM corresponding to the neighboring peer LGN goes out of the 2-Way state."

26) 5.7.1; add the following item to the list.

"Last Received Database Summary Packet's Identifying Information
The Database Summary packet flags (including the Initialize, More, Master, and reserved bits) and DS sequence number contained in the last Database Summary packet received from the neighboring peer. This information is used to determine whether the next Database Summary packet received from the neighboring peer is a duplicate."

27) 5.7.4, FSM_ERR Action; change "FSM_ERR Action: Protocol error, should not occur." to

"FSM_ERR: Represents an internal implementation error."

28) 5.7.4, Ds1 Action; replace the first two sentences of the second paragraph by the following.

"Upon entering this state, if this is the first time that an adjacency has been attempted, the DS sequence number should be assigned some unique value (like the time of day clock). Otherwise, the node increments the DS sequence number saved from the previous time this adjacency was active for this neighboring peer, if that information is still available. Upon entering this state, the node increments the DS sequence number for this neighboring peer. If this is the first time that an adjacency has been attempted, the DS sequence number should be assigned some unique value (like the time of day clock)."

29) 5.7.4, Ds9 Action; add "In the Full state" to the beginning of the third sentence.

"In the Full state, if there is a PTSE advertising that link, a new instance of the affected PTSE must be originated."

30) 5.7.5; replace the last sentence of the paragraph labelled "Master" by the following.

"If the node has already sent its entire sequence of Database Summary packets, then the More bit must be set to zero. If this packet includes the last portions of the database summary to be sent to the slave, then the More bit may optionally be set to zero. If the node has already sent its entire sequence of Database Summary packets, or if this packet includes the last portions of the database summary to be sent to the slave, then the More bit must be set to zero."

31) 5.7.6, first paragraph; modify paragraph as follows.

"This section explains the detailed processing of a received Database Summary packet. The incoming Database Summary packet is associated with a neighboring peer by the interface over which it was received. Each Database Summary packet has a DS sequence number, and is implicitly acknowledged. The further processing of the Database Summary packet depends on the state of the neighboring peer data structure associated with the Remote Node ID.

~~If a Database Summary packet is accepted, the following packet fields are saved in the corresponding neighboring peer data structure as the "Last Received Database Summary Packet's Identifying Information": the Database Summary packet flags (including the Initialize, More, Master, and reserved bits), and the DS sequence number. If these fields are set identically in two consecutive Database Summary packets received from the neighboring peer, the second Database Summary packet is considered to be a "duplicate" in the processing described below.~~

If the neighboring peer state is NPDown the packet must be ignored."

32) 5.7.6, last bullet under "Negotiating"; add "set the Initialize bit to zero" to the bullet as follows.

"Increment the DS sequence number by one, ~~set the Initialize bit to zero,~~ send a Database Summary packet to the slave including the first portion of this node's database summary (see Section 5.7.5) and restart the DS Rxmt Timer."

33) 5.7.6; modify the first paragraph and associated bullets as follows.

"Exchanging

~~Execute the following steps in order:~~

- ~~If the node is master and the received Database Summary packet is a duplicate, stop processing the packet.~~
- ~~If the node is slave and the received Database Summary packet is a duplicate, respond by retransmitting the last Database Summary packet sent to the master and stop processing the received Database Summary packet.~~
- If the state of the Master bit is inconsistent with the master/slave state of the connection, generate the event DSMismatch and stop processing the packet.~~-~~ ~~Otherwise:~~
- If the Initialize bit is set, generate the event DSMismatch and stop processing the packet.
- If the node is master and the packet's DS sequence number equals the node's own DS sequence number (this packet is the next in sequence), the packet must be accepted and processed as follows (the last two actions need not be taken in this order):
  - Stop the DS Rxmt Timer,
  - Process the contents of the received Database Summary packet (see below),
  - In the following order:
    - A) Increment the DS sequence number by one,
    - B) If the node has already sent its entire sequence of Database Summary packets (i.e., the previous Database Summary packet that the node sent had the More bit set to zero), and the received packet also has the More bit set to zero, generate the event ExchangeDone if the PTSE Request List is not empty, or the event SynchDone if the PTSE Request List is empty.
    - C) Otherwise, send a new Database Summary packet to the slave and restart the DS Rxmt Timer (see Section 5.7.5).

- ~~If the node is master and the packet's DS sequence number is one less than the node's DS sequence number, the packet is a duplicate. Duplicates must be discarded by the master.~~

- If the node is slave and the packet's DS sequence number is one more than the node's own DS sequence number (this packet is the next in sequence), the packet must be accepted and processed as follows (in no particular order):
  - Process the contents of the received Database Summary packet (see below),
  - In the following order:
    D) Set the DS sequence number to the DS sequence number appearing in the received packet,
    E) Send a Database Summary packet to the master (see Section 5.7.5),
    F) If the received packet has the More bit set to zero, and the just transmitted Database Summary packet also had its More bit set to zero (i.e., the contents of the just transmitted Database Summary packet were empty), then generate the event ExchangeDone if the PTSE Request List is not empty, or the event SynchDone if the PTSE Request List is empty.

- ~~If the node is slave, and the packet's DS sequence number is equal to the node's DS sequence number, the packet is a duplicate. The slave must respond to duplicates by repeating the last Database Summary packet that it had sent.~~
- Else, generate the event DSMismatch and stop processing the packet."

34) 5.7.7, third paragraph, third sentence; add "from any neighboring peer, that PTSE Request packet is no longer considered to be outstanding, and".

"When all of the PTSEs included in the last PTSE Request packet have been received from any neighboring peer, that PTSE Request packet is no longer considered to be outstanding, and a new PTSE Request packet may be sent to the same neighboring peer."

35) 5.7.8; add the following new paragraph to the end of the section.

"If a PTSE Request packet is received while the previous PTSE Request packet from that neighboring peer is still being processed, the processing of the earlier PTSE Request packet may be terminated provided that at least one PTSE has been sent in response to the previous PTSE Request packet. If no PTSEs have yet been sent in response to the previous PTSE Request packet, then at least one of the requested PTSEs must be sent, after which the processing of the previous PTSE Request packet may be terminated. The newly received PTSE Request packet is then processed as usual."

36) 5.8.1.1.3.4, second paragraph; add text to end of paragraph.

"The permitted range is 1 to 16,777,215. The upper limit was chosen to allow 32-bit arithmetic to be used in accumulating administrative weight for the path."

37) 5.8.1.2.3, sixth paragraph, second sentence; change "one" to "zero" to remove inconsistency with Table 5-36.

"If it is set to ~~one~~zero to indicate the simple node representation, then ..."

38) 5.8.2.2.1, bullet item for PTSE Type; modify the description by adding ", or that no restricted information groups are allowed".

"The PTSEType field indicates which restricted information groups are allowed to appear inside of the PTSE, or that no restricted information groups are allowed (see Section 5.14.9 for details)."

39) 5.8.3.9, bullet 2); delete "or on any of the node's PeerDelayedAcks lists" and add "Optionally the node may wait until the PTSE is no longer on any PeerDelayedAcks lists before deleting the PTSE."

"The PTSE is no longer contained on any of the node's Peer Retransmission Lists ~~or on any of the node's PeerDelayedAcks lists~~. Optionally the node may wait until the PTSE is no longer on any PeerDelayedAcks lists before deleting the PTSE."

40) add a new section 5.8.3.10.

"**5.8.3.10 Handling of PTSE sequence number wraparound**

Under normal circumstances, the 32 bit range of the PTSE sequence number is large enough that the upper limit (all ones) will not be reached; however, faults may cause the sequence number to reach all ones.

If a node needs to originate a new local PTSE and the existing instance has sequence number of all ones, it should follow the procedures given for invalid PTSEs in section 5.10.4 to remove the old instance from the network before originating the new data with a new (low) sequence number. Alternatively, in the case of PTSEs other than the Nodal Info PTSE, the node may flush the old data and originate a PTSE containing the new data using a new PTSE identifier."

41) 5.10.1.1, first paragraph; add the sentence, "The nodal information of all reachable nodes in the peer group is considered for the purposes of PGL election, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group." as shown.

"The PGL election algorithm is used to dynamically select an appropriate node to assume peer group leadership within a peer group or to replace an outgoing PGL. Among all nodes to which a node has connectivity, it must vote for the one with the highest non-zero PGL priority subject to tie breaking using node IDs. The leadership priority is advertised by all nodes in the peer group in PTSEs. If no node advertises a non-zero PGL priority, then no node is selected. A node will consider a 2/3 majority vote sufficient for PGL election after it determines that a unanimous vote cannot be obtained within a sufficient time, so that errant implementations in a small number of nodes in the peer group are not likely to cause a hung election. For a similar reason, all nodes in a peer group must participate in PGL election during normal operation. The nodal information of all reachable nodes in the peer group is considered for the purposes of PGL election, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group. However, a node that has the Non-transit for PGL Election flag set in its Nodal IG does not participate in PGL election, i.e., it does not run the PGL election FSM and advertises zero for Leadership Priority and Preferred PGL. Such nodes are also not considered by other nodes in the peer group when determining connectivity in the peer group, and the PGL priority and preferred PGL advertised by such overloaded nodes are ignored by all other nodes."

42) 5.10.1.1.3, Heading; change the heading to "Events Causing PGL Election State Changes".

"5.10.1.1.3 Events Causing ~~Neighboring Peer~~ PGL Election State Changes"

43) 5.10.1.1.3, Unanimity, OverrideUnanimity, and OverrideUnanimityFailure; add "reachable" and the Note, "Note that the preferred PGL advertised by each reachable node in the peer group is considered when counting votes, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group." to each as follows.

"Unanimity

The node's preferred PGL is itself, and all other reachable nodes in the peer group now indicate in their PTSEs that their preferred PGL is this node. Note that the preferred PGL advertised by each reachable node in the peer group is considered when counting votes, even when the nodal information PTSE or nodal information IG

contains an unknown mandatory information group.

OverrideUnanimitySuccess

The OverrideUnanimity timer has fired. The node's preferred PGL is itself. 2/3 or more of other reachable nodes in the peer group indicate in their PTSEs that their preferred PGL is this node. Note that the preferred PGL advertised by each reachable node in the peer group is considered when counting votes, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group.

OverrideUnanimityFailure

The OverrideUnanimity timer has fired. The node's preferred PGL is itself. Less than 2/3 of other reachable nodes in the peer group indicate in their PTSEs that their preferred PGL is this node. Note that the preferred PGL advertised by each reachable node in the peer group is considered when counting votes, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group."

44) 5.10.1.1.4; change "FSM ERR Action: Protocol error, should not occur." to

"FSM_ERR: Represents an internal implementation error."

45) 5.10.1.1.5, last paragraph; change "... state PGL." to

" ... state OperPGL."

46) 5.10.1.1.6; add a new paragraph after the first paragraph.

"For purposes of choosing the PreferredPeerGroupLeader, the nodal information group of each reachable node in the same peer group must be considered, even if an unknown mandatory information group was contained in the nodal information group."

47) 5.10.1.5; add a new paragraph after the second paragraph (i.e. last paragraph).

"If the next higher level binding information group advertised by an ancestor contains an unknown mandatory information group within it, then that information must be ignored for computation of nodal hierarchy lists."

48) 5.10.4, last bullet; add the following text after the bullet to clarify its application to database summary packets.

"These cases apply both to the reception of a PTSE, and to the reception of a database summary packet announcing the existence of such a PTSE."

49) 5.12.2.1, last paragraph; delete paragraph.

"~~DTL origination (for call origination or entry border node processing) is necessarily inaccurate since the topology database is incomplete. However, it is still useful to allow it, since routes calculated using the incomplete topology database are still valid (though they may be suboptimal).~~"

50) 5.13; add the following text at the end of the first paragraph.

"Note: Scope checking takes precedence over longest match."

51) 5.13; replace the sixth paragraph with the following text.

"In the case of path selection for point to multipoint connections, the node shall select a path so that the reachable branches of the resulting connection form ~~is~~ a tree. No two branches of a point to multipoint connection may have a link in common, nor may they have a node in common other than the node at which they branch, except when one of the branches cannot accept new parties at the time when the other branch is first specified. One example of a case where a branch cannot accept new parties is when the identity of a logical group node along

the path changes due to a change in the underlying peer group leader. (Note that the effect of this rule is that a node is required to keep track of the tree representation of a point to multipoint connection, rather than keeping track only of the leaves. All pending parties must be considered part of the tree. A party is considered part of the tree as soon as a route for the corresponding SETUP or ADD PARTY message is determined, and stops being part of the connection tree when the party is rejected or dropped.)"

52) 5.13.1, first paragraph; add the following paragraph after the first paragraph.

"For a horizontal link to be considered, it must have been advertised by both ends of the link. Advertisements from two ends are considered to describe the same horizontal link only if the remote node ID of each matches the local node ID of the other and the remote port ID of each end matches the local port ID of the other."

53) 5.13.4.1, Table 5-17, Title; change the title by adding "0+".

"**Table 5-17: PCR and SCR values for CLP=~~0~~0+1**"

54) 5.13.4.3; add the following after the current text and algorithm:

The following algorithm may also be used as the S-GCAC algorithm.

Step 1. If AvCR >= C, include the link, stop
Else exclude the link, stop

Where C is given by***

| | |
|---|---|
| if (PCR <= 4*SCR), | C = (PCR + SCR) / 2 |
| else if (PCR <= 16*SCR) | C = PCR/8 + 2*SCR |
| else if (PCR <= 64*SCR) | C = (3*PCR + 465*SCR) / 128 |
| else | C = (13*PCR + 4413*SCR) /1024 |

Both Simple GCAC algorithms are piecewise linear approximations of the following equation:

C = SCR * (1 + ln (PCR/SCR))

55) 5.14, second paragraph, third sentence; add ", and their semantics are independent of the sequence in which they occur" to the end of the sentence.

"Type values are only understood within the context of the containing information group, and their semantics are independent of the sequence in which they occur."

56) 5.14.2.1; modify entire section as follows.

"The mandatory tag prevents systems which do not understand the information group from using the immediately containing information group, except where noted otherwise in this specification. For example if the unknown mandatory information group occurs immediately within a horizontal link information group, then the described link must not be used in route computation.

If a system receives a PTSE with a top level mandatory tagged information group that is otherwise unknown, it must accept the PTSE, check the checksum and sequence number in the normal manner, and acknowledge, store, and forward the PTSE as appropriate in the normal manner. However, the network entities~~y~~ (node, reachable addresses, nodal spokes and bypasses, or link~~s~~) described by that PTSE must not be used for any route computation, nor included in DTLs which are created resulting from a route computation.

However, a node receiving a call request containing a specified DTL must follow the DTL as specified independent of whether any element contained in the DTL may have been described using unknown mandatory information groups, or whether any information groups containing

the element were described using unknown mandatory information groups. The node receiving the call request must process the call request, and assume that the system which prepared the associated DTLs knew what it was doing (i.e., understood any mandatory information groups) and therefore was able to choose a correct DTL for the call. Similarly, if a higher level DTL specifies use of a specific link, which maps to a particular lower level uplink or uplinks, then a node selecting a corresponding lower level DTL must choose a corresponding lower level uplink in its DTL, regardless of any unknown mandatory information groups on the uplink. This is described in more detail in Section 6.

For purposes of PGL election, the nodal information of all reachable nodes in the peer group is considered, even when the nodal information PTSE or nodal information IG contains an unknown mandatory information group (see Section 5.10.1). Unknown mandatory information groups also have no effect on the connectivity calculation used for PGL election and summarization (see Sections 5.10.1.1.3 and 5.11.3).

For PNNI 1.0 ~~phase 1~~ all information groups defined in this specification must be recognized."

57) 5.14.2.2; add a new paragraph to end of section.

"If a system receives a PTSE with an unknown top level information group tagged as not summarizable, the other top level information groups in the PTSE must not be summarized."

58) 5.14.2.3; modify the entire section as follows.

"Assuming that an item with an unknown information group may be summarized, there is still the question of what to do with the individual information group. If the information group is tagged non-transitive, then the information group must be removed prior to summarization. If it is tagged transitive, then the information group must be preserved (still tagged as transitive and summarizable) in the advertisements of the LGN representing the PGL's peer group.

~~With items which are exposed individually, such as a single outside link, preservation of a transitive information group is not a problem. With aggregated entities there is more question.~~

For top level information groups in PTSEs, the transitive tag must be ignored and treated as if it were set to non-transitive. The rules on mandatory non-transitive information groups apply to this case, even when the transitive tag is set (see Section 5.14.2.4).

When a PGL receives a nodal IG that contains an unknown information group tagged as summarizable and transitive, the unknown information group must be advertised by the LGN representing the PGL's peer group, contained in the LGN's nodal information group. ~~If an information group is tagged as transitive, and is aggregated into an advertisement in the parent peer group, and the information group is not known by the peer group leader, then the resulting advertisement must contain the information group (still tagged as transitive and summarizable).~~ Note that this means that if a single node in a peer group has a summarizable transitive unknown attribute ~~metric~~, then that information group will be applied to the entire peer group.

When a PGL receives an internal or exterior reachable address IG that contains an unknown information group tagged as summarizable and transitive, the unknown information group must be advertised by the LGN representing the PGL's peer group, contained in the corresponding internal or exterior reachable address IG(s).

When a PGL receives a horizontal link or nodal state parameters IG that contains an unknown information group tagged as summarizable and transitive, the unknown information group must be advertised by the LGN representing the PGL's peer group, contained in at least one of its nodal state parameters IGs. For example, if the default node representation is used, then the unknown information group must be contained in the nodal state parameters IG specifying the

radius. Alternatively, if the unknown information group applies only to nodal connectivity from one specific port, a specific exception nodal state parameters IG could be generated to represent the spoke to that port, with the unknown information group contained in the exception IG. Note that an information group contained in a horizontal link IG must not be tagged as transitive unless that type of information group is also defined to occur within nodal state parameters IGs.

When a PGL receives an uplink IG that contains an unknown information group tagged as summarizable and transitive (or contains a ULIA that contains an unknown information group tagged as summarizable and transitive), the unknown information group must be advertised by the LGN representing the PGL's peer group, contained in the corresponding uplink or horizontal link IG. Note that an information group contained in an uplink IG must not be tagged as transitive unless that type of information group is also defined to occur within horizontal link IGs.

If two or more advertisements which are being aggregated ~~both~~ each carry an information group of the same transitive type, but with different values, then the PGL must ~~will~~ preserve ~~both~~ the information groups, implying that the same information group may occur multiple times."

59) 5.14.2.6, last paragraph, first sentence; modify as indicated.

"All PNNI 1.0 information groups shall be originated with their information group tags set to optional, summarizable, non-transitive, with ~~one~~two exception~~s~~: the Transit network ID information group shall have information group tag values optional, summarizable, transitive and the system capabilities IG may have any combination of IG tags."

60) 5.14.9, Table 5-32; replace the first two sentences describing the PTSEType with the following text.

"PTSE Type must be one of the type codes of a restricted IG or NoRestrictedIG (type=0). In this PTSE, that particular restricted IG may appear, and also any unrestricted IGs. Restricted IGs other than the one mentioned are not allowed. If the type is NoRestrictedIG then no restricted IGs are allowed. ~~Indicates which restricted information groups are allowed to appear inside of the PTSE. Only those restricted information groups with a matching TLV type may be included.~~"

61) 5.14.9.1.2, Table 5-35; add to the Function/Description column of offset 108 the text, "NULL is coded as all zero's".

"

| | | | |
|---|---|---|---|
| 108 | 22 | Node ID of PGL of parent peer group | NULL if unknown<br>NULL is coded as all zero's. |

62) 5.14.9.3; modify the first paragraph as follows.

"An uUnknown information group~~s are those which appear in a PTSE of a certain type, but which do not match the type indicated and are not known to be unrestricted TLVs~~ is an information group with a type that is not defined to occur within its containing information group. As specified in Section 5.14.2, unknown information groups are to be processed according to the specified information group tags."

63) 5.14.9.3; add the following text after the second paragraph.

"As a special case, in the system capabilities information group the IEEE OUI is considered to be logically included as part of the IG type (i.e., the system capabilities information group is treated as unknown whenever the IEEE OUI value in the information group is unknown)."

64) 5.14.9.4; modify the entire section as follows.

"Due to the described restrictions in the content of PTSEs, it cannot be excluded that certain PTSEs will be flooded which violate these rules. ~~The possible error cases and the actions to be taken are:~~

~~1) If a PTSE includes a restricted information group whose type does not match the PTSEType, the information contained in such a group is ignored for the sake of route computation.~~
~~2) Unknown information groups are treated like unrestricted information groups. They are processed according to the specified information group tags.~~
~~3) If a mandatory restricted information group is missing in a PTSE (an example would be an empty PTSE with type equal to "nodal information" and PTSE Identifier = 1), the PTSE must be ignored during route computation.~~
~~4) If a PTSE with an unknown PTSEType is received, all restricted information groups inside are treated according to rules 1) and 2).~~

~~In order to describe the actions taken in certain error cases, the concept of state-significant computations is introduced. A TLV or IG should not only be ignored for the sake of path computation but also ignored for~~State-significant computations are those computations that ~~involve~~ any ~~other~~ kind of processing on the topology database mirroring into the content of other PTSEs. Those kinds of computation are called state-significant computations because they influence the internal state of the protocol and are as specified today:

i) link aggregation
ii) uplink generation
iii) computation of complex node representation of the peer group
iv) peer group leader election except counting the vote for the election if present
v) computation of hierarchy to be advertised in outside hellos
vi) reachability computation

Path computation is not considered a state-significant computation due to the fact that if two nodes compute different routes from the same set of information, it may adversely affect the throughput of the network and call rejection rates but does not prevent the protocol state machines themselves from operating correctly. Therefore, path computation is free to choose different strategies when dealing with the cases described below varying from one implementation to another although it is recommended that the rules specified are used. Information which is ignored according to the following sections must be re-evaluated when the condition which caused it to be ignored changed.

The possible error cases~~, with regard to processing of restricted and unrestricted IGs received within PTSEs,~~ and the actions to be taken are:

1) If a PTSE includes a restricted information group whose type does not match the PTSEType, the information contained in such a group is ignored for the sake of ~~route~~state-significant computation~~s~~.
2) Unknown information groups are treated like unrestricted information groups ~~(i.e., it is assumed that they are allowed to appear in PTSEs of any PTSEType)~~. They are processed according to the specified information group tags.
~~3) If a mandatory restricted information group is missing in a PTSE (an example would be an empty PTSE with type equal to "nodal information" and PTSE Identifier = 1), the PTSE must be ignored during route computation.~~
~~3~~4) If a PTSE with an unknown PTSEType is received, all information groups inside are treated according to rules 1) and 2)."

65) 5.14.9.5; modify the entire section as follows.

"The TLV formatting supported in the PTSEs does not syntactically prevent ambiguities in packet semantics such as:

a) Although the type of an IG is defined to occur within its containing IG, for other reasons the IG is not supposed to appear, buta TLV is supposed not to appear, appears at least once
b) an IGTLV is supposed to appear exactly once inside an embedding IGTLV, but appears multiple times
c) an IGTLV is supposed to appear at least once, but does not appear at all
d) a TLV of this type is not supposed to appear embedded in the embedding type
de) the same IGTLV appears multiple times in different PTSEs (PTSEs with different IDs)

Note that type values are only understood within the context of the containing information group, as specified in Section 5.14. Specifically, an IG with a type that is not defined to occur within its containing IG shall be treated as unknown, and shall be processed according to the values of the information group tags encoded in its type field. Note that there is a difference between this case and a) above, where the IG is understood but presence of the IG is not consistent with the values of other variables advertised by that node.

Case d) is treated uniformly. An unexpected TLV appearing inside of embedding TLV (e.g. nodal info TLV appearing inside of a horizontal link TLV) is treated according to Section 5.14.9.4. ( where a RIG appears inside a PTSE indicating a different type).

Note: There is a subtle difference between a) and d) and between a) and the unknown TLV case (the latter is handled by attribute tags)."

66) 5.14.9.5.1; modify the entire section as follows.

"a) not applicable
b) if a nodal info IGTLV appears multiple times in the designated PTSE, two implementations interpreting different of those IGTLVs as valid could lead to scenarios where PGL election does not converge. The solution proposed is to only consider the first appearing nodal info IGTLV as valid and significant for state-significant computation purposes and ignore all following IGs.
c) if a nodal info IGTLV does not appear in the designated PTSE at all, it is proposed that the PTSE and all further PTSEs issued by this node shallshould be ignored for the state-significant computations except vi). So a node with an invalid nodal info can be used to compute reachability to other nodes in the network for the sake of e.g. peer group leader election but its PTSEs like e.g. horizontal links cannot be used for the sake of path computation.
d) n/a.
e) is not possible due to the fact that this IG can appear only in a PTSE with ID 1, otherwise it is ignored."

67) 5.14.9.5.2; modify the entire section as follows.

"**5.14.9.5.2 Next higher Level Binding IGTLV in Nodal Info IGTLV**

a) if such an IGTLV appears once or multiple times inside of a nodal info IGTLV with cleared `I'am leader'-Bit, such an IGTLV must be ignored.

The following cases only apply to IGTLVs where the `I'am leader'-Bit is set and additionally the node has been determined as peer group leader:

b) if the binding appears multiple times, only the first thereof must be used for state-significant computation and all following ignored.
c) normal situationif no next higher level binding IG appears, then this node behaves as

if the `I am leader' bit is not set (i.e., this node's ancestry is unknown at levels higher than that of the advertising node). Specifically, the nodal hierarchy list advertised by this node in Hellos to outside neighbors cannot include any information about the advertising node's parent node. This node also cannot originate calls on uplinks to upnodes at levels higher than that of the advertising node (see Section 5.13.1).

d) n/a.

e) equivalent to 5.14.98.5.1 e)."

68) 5.14.9.5.3; modify the entire section as follows.

"5.14.9.5.3 Nodal State Parameters IGTLV

The following cases only apply to IGTLVs where the `NodalComplex Representation'-Bit is set (i.e., the node is complex).

a) not applicable

b) if a nodal state parameters IGTLV appears multiple times inside of a single PTSE only the first one is used for any state-significant computations (even if the service category sets defined do not intersect). This includes the default spoke.

c) default spoke does not appear. Any PTSE of the node is ignored for the sake of state-significant computations except for vi). Such a node can be used to compute reachability to other nodes in the network for the sake of e.g. peer group leader election but its PTSEs like e.g. horizontal links cannot be used for the sake of path computation. Spokes of this node may not be used in state-significant computations unless exceptions are advertised for both directions, except for vi). This does not affect iv) (PGL election), v) (computation of hierarchy to be advertised in outside hellos), or vi) (reachability computation).

d) n/a.

e) if a nodal state parameters IG appears multiple times in different PTSEs (even if the service category sets defined do not intersect), only the one appearing in the PTSE with the lowest ID is used for state-significant computations.

If the node does not have the `NodalComplex Representation'-Bit set (i.e., the node is simple).

a) if nodal state IGTLVs appear they are ignored for the sake of any state-significant computations

b) not applicable.

c) not applicable.

d) n/a.

e) analog a)."

69) 5.14.9.5.4; modify the entire section as follows.

"5.14.9.5.4 Horizontal Link IGTLV

a) not applicable

b) if such IGTLV appears multiple times inside of a single PTSE only the first one is used for any state-significant computations (even if the service category sets defined do not intersect).

c) not applicable

d) n/a.

e) if an IGTLV appears multiple times in different PTSEs (even if the service category sets defined do not intersect), only the one appearing in the PTSE with the lowest ID is used for state- significant computations. This rule also applies when a horizontal link IG and an uplink IG appear (necessarily in different PTSEs) with the same value for the local port ID."

70) 5.14.9.5.5; modify the entire section as follows.

"5.14.9.5.5 Uplink ~~IG~~TLV

Equivalent to 5.14.~~9~~8.5.4."

71) 5.14.9.5.6; modify the entire section as follows.

"5.14.9.5.6 ULIA

a) not applicable
b) if multiple ULIAs appear in an uplink ~~IG~~TLV, only the first one is used for state-significant computations.
c) ~~not applicable~~if an uplink IE does not have a ULIA associated with it, then the link can not be used for state-significant computations (e.g. link aggregation) and route computation.
d) n/a.
e) not applicable"

72) 5.14.9.5.7; modify the entire section as follows.

"5.14.9.5.7 RAIGs

If a service category appears in multiple RAIGs within a horizontal link, uplink, nodal state parameters, or ULIA IG, then only ~~the one appearing in~~ the first RAIG in which this service category appears applies ~~is used~~ for this service category in state-significant computations."

73) 5.14.9.6; modify the entire section as follows.

"5.14.9.6 Nodal Information PTSE and its connection to other PTSEs issued by the node

Since the nodal information PTSE carries several important flags and specifications of the advertising node ~~issuing~~, it is important to specify the semantics of a set of PTSEs that has been received without the appropriate nodal information PTSE being present. To improve the stability of the protocol all state-significant computations ~~except vi) should~~ shall ignore PTSEs for which a valid nodal information PTSE is not present. ~~Path computation can omit this restriction, however it should not be forgotten that e.g. paths computed through a node's complex representation are not valid after nodal info PTSE is received that specifies that the node does not have a complex representation.~~"

74) 5.14.13, third paragraph; modify as follows and add two new paragraphs.

"The system capabilities IG MAY optionally be included at any~~the top~~ level in any PNNI packet~~s~~ (specifically including Hellos, Database Summary Packets, and PTSPs) and also in a PTSE, ~~as well as~~but not within an information group inside of a PTSE. Also, this field may ~~be~~ occur multiple times (for example, it may be desirable to identify both extended standard capabilities as well as proprietary capabilities).

~~In the system capabilities IG the IEEE OUI is considered to be logically included as part of the IG type. If a system capabilities IG is received with an IEEE OUI that is not defined to occur in the containing IG, the system capabilities IG must be treated as an unknown information group. This is distinct from the case of a restricted information group appearing in a PTSE with a PTSEType that does not match, since the specified information group tags must be processed for unknown information groups.~~

~~For IGs appearing within the system capabilities information group, the context of the containing information group is given by the value of the IEEE OUI as well as the IG type (i.e. system capabilities). The type values of child IGs need only be unique among all possible type values defined to occur within a system capabilities information group with the same IEEE OUI value.~~"

75) 6.4.5.23; change reference to 7.2.2.1.
"See section 7.2.2.1 ~~7.1.3.1~~ of UNI 4.0 signalling specification."

76) 6.4.5.27; delete reference to UNI 4.0 signalling specification.
"See ~~Annex 7, section A7.1.2.1 of the UNI 4.0 signalling specification, and~~ section 4.5.23 of Recommendation Q.2931.."

77) 6.5.2.3.4, first paragraph, second sentence; change reference, "6.4.5.2.6" to "6.4.5.26".
"If the parameters of the Alternative ATM traffic descriptor information element or Minimum acceptable ATM traffic descriptor information element are not according to the allowed combinations as specified in Sections 6.4.5.7 and 6.4.5.~~2.6~~26 respectively, ..."

78) 6.5.2.3.5, fifth paragraph, bullet 3; add reference, "8.3.1.1".
"3. The preceding side shall determine if the highest/lowest acceptable values of that parameter can be supported. If no values {less than/greater than} or equal to the highest/lowest acceptable value can be supported, then the preceding side shall follow the crankback procedures specified in Annex B section 8.3.1.1 and 8.3.1.2,using cause and crankback cause No. 49, "Quality of service unavailable"."

79) 6.5.2.3.5, ninth paragraph, bullet 3; add more detailed references.
"3. Determine if the highest/lowest acceptable values of that parameter can be supported. If no values {less than/greater than} or equal to the highest/lowest acceptable value can be supported, then the succeeding side shall follow the crankback procedures specified in Annex B section ~~8.3~~ 8.3.1.1 and 8.3.1.3, returning a RELEASE or RELEASE COMPLETE message (depending on whether or not a CALL PROCEEDING message has been sent yet) with cause and, if applicable, crankback cause #49, "Quality of service unavailable"."

80) 6.5.2.3.5, tenth paragraph; replace "forward" with "backward".
"If no acceptable ~~forward~~ backward value of an allowed individual QoS parameter ..."

81) 6.5.2.3.6; change the words "ATM additional parameter" to "ABR additional parameter".
"● Negotiation of parameters in the ~~ATM~~ ABR additional parameters information element:

Parameter values for ~~ATM~~ ABR additional parameter can be negotiated by either side, but only when the parameter is present in the SETUP message (i.e., was supplied by the calling user). If the parameter is absent, the default value applies, and no negotiation is possible for the parameter in this case. If the ~~ATM~~ ABR additional parameters information element is not included in the SETUP message, ..."

82) Annex A; global change, replace 'succeeding end blocked indicator' with 'blocked transit type of "call or party has been blocked at the succeeding end of this interface" '.

83) Annex B; global change, replace 'succeeding end blocked indicator' with 'blocked transit type of "call or party has been blocked at the succeeding end of this interface" '.

84) Annex B, 8.2.1.1, first paragraph, last sentence; remove cause #2 as an option.
"Similarly, if the only best match address prefixes are summary addresses advertised by this node or one of its ancestors, the call shall be cleared with ~~cause #2 "no route to specified transit network" or~~ cause #3 "no route to destination"."

85) Annex B, 8.3.1.2, second sentence; modified as follows.

"If the node at the preceding end of the link is an entry border node or the DTL originator for the call, then the procedures of Section 8.3.2.2 shall apply."

86) Annex B, 8.3.2.3; modify the entire section as follows.

"The procedures for processing clearing messages with crankback for point-to-multipoint calls/connections are the same as those for point-to-point calls/connections, except when a RELEASE or RELEASE COMPLETE message is received and there are queued add partyADD PARTY requests on the add partyADD PARTY queue for this call/connection.

The first step in the additional procedures is to determine which add party requests are affected. If the network node does not attempt alternate routing for the party for which the RELEASE or RELEASE COMPLETE message was received, and the blocked transit in the crankback information element is the succeeding end of this interface, then the network node shall send an ADD PARTY REJECT message for each queued ADD PARTY request towards the preceding network node, with the crankback indication according to the previous sub-sections all queued add party requests are affected.

If the network node does not attempt alternate routing for the party for which the RELEASE or RELEASE COMPLETE message was received, and the blocked transit in the crankback information element is not the succeeding end of this interface, then the network node shall crank back the party for which the RELEASE or RELEASE COMPLETE message was received, and either: may either:

1. consider none of the queued add party requests to be affected, orProgress one of the ADD PARTY requests on the ADD PARTY queue by sending a SETUP message, leaving the remaining ADD PARTY requests pending, or
2. consider only those queued add party requests whose DTLs contain the blocked transit to be affected.Crank back all ADD PARTY requests on the ADD PARTY queue whose DTLs contain the blocked transit, and

Note that paths of pending add party requests (e.g. unaffected add party requests) must be considered as part of the connection tree when choosing alternate routes for affected add party requests, and for the initial party whose route was rejected when the RELEASE or RELEASE COMPLETE message was received (see Section 5.13).

If there are any unaffected add party requests remaining on the queue, the network node shall progress one of the unaffected add partyADD PARTY requests remaining on the add partyADD PARTY queue (if any) by sending a SETUP message, leaving the remaining unaffected add partyADD PARTY requests pending.

Affected queued add party requests must either be rejected or rerouted so as to avoid the blocked node or link (subject to the normal rules for DTL processing). For each affected queued add party request,If alternate routing is attempted for the party for which the RELEASE or RELEASE COMPLETE message was received, the node shall determine if and how the queued ADD PARTY requests can be satisfied. If the request can be satisfied by adding it to a branch which is in the Active state, then it shall send an ADD PARTY message to the corresponding succeeding node. If a new branch is required and the branch is in the Null state, it shall send a SETUP message to the corresponding succeeding node. If a new branch is required, and the branch is in the Call Initiated, Outgoing Call Proceeding, or Call Delivered state, then it shall queue the party. More than one branch may be needed to satisfy all the queued add partyADD PARTY requests. If an affected add partyADD PARTY request cannot be satisfied, then the network node shall send an ADD PARTY REJECT message for that add partyADD PARTY request toward the preceding network node, with the crankback indication according to the previous sub-sections. The manner in which the node determines whether an affected add partyADD PARTY request can be satisfied, and how it will do so, is

implementation specific."

87) Annex B, 8.3.3, item 1)b.1; change step from 2.b.1.1 to 2.b.1.

" b.1 yes: goto 2.b.1.~~1.~~"

88) Annex B, 8.3.3, item 1)b.2; add text.

" b.2 no: does this node support alternate routing using alternate link and are other links satisfying received DTLs available?"

89) Annex B, 8.3.3, item 2)a.2.2; add text.

" a.2.2 no: does this node support alternate routing using alternate link and are other links satisfying received DTLs available?"

90) Annex B, 8.3.3, item 2.b.1.2, third "If"; change "node" to "link".

"If link following logical group node was cause of blocking:
blocked transit type = blocked ~~node~~link"

91) Annex G; delete item 16, "Notification of End-to-end Connection Completion" in Table 13-1.

92) Annex G; change item 33 in Table 13-1 to the following.

"~~Origination of~~ Exterior reachable address advertisement"

93) Annex H; update revision clause, new date, add new revision and DESCRIPTION.

```
pnniMIB MODULE-IDENTITY
        LAST-UPDATED    "9~~705016022~~70000Z"
        ORGANIZATION    "The ATM Forum"
        CONTACT-INFO
            "The ATM Forum
             2570 West El Camino Real, Suite 304
             Mountain View, CA 94040-1313 USA
             Phone: +1 415-949-6700
             Fax:   +1 415-949-6705
             info@atmforum.com"
        DESCRIPTION
            "The MIB module for managing ATM Forum PNNI routing."
        REVISION        "97050100000Z"
        DESCRIPTION
            "Updated version of the PNNI MIB released with the PNNI
             V1.0 Errata and PICS (af-pnni-0081.000)."
        REVISION        "9602270000Z"
        DESCRIPTION
            "Initial version of the MIB for monitoring and controlling
             PNNI routing."
        ::= { atmfPnni 1 }
```

94) Annex H, PnniMetricsTag; add text to end of DESCRIPTION and change "MAX" to "2147483647".

```
    PnniMetricsTag ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "An index into the pnniMetricsTable.  The suffix tag is used
             to indicate that there may be many related entries in the
             table further discriminated by other index terms.  The
             distinguished value zero indicates that no metrics are
             associated with the described entity."
        SYNTAX        Integer32 (0..2147483647~~MAX~~)
```

95) Annex H; deprecate the existing pnniSummaryTable of the MIB.

```
-- Deprecated sSummary advertising table
```

```
pnniSummaryTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniSummaryEntry
        MAX-ACCESS    not-accessible
        STATUS        deprecated
        DESCRIPTION
            "A list of the summary address prefixes that may be
             advertised by the specified logical PNNI entity."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        ::= { pnniMIBObjects 7 }

pnniSummaryEntry OBJECT-TYPE
        SYNTAX        PnniSummaryEntry
        MAX-ACCESS    not-accessible
        STATUS            deprecated
        DESCRIPTION
            "An entry in the table, containing summary address prefix
             information in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        INDEX         { pnniNodeIndex,
                        pnniSummaryAddress,
                        pnniSummaryPrefixLength }
        ::= { pnniSummaryTable 1 }

PnniSummaryEntry ::=
        SEQUENCE {
                pnniSummaryAddress            AtmAddrPrefix,
                pnniSummaryPrefixLength       PnniPrefixLength,
                pnniSummaryType               INTEGER,
                pnniSummarySuppress           TruthValue,
                pnniSummaryState              INTEGER,
                pnniSummaryRowStatus          RowStatus
        }

pnniSummaryAddress OBJECT-TYPE
        SYNTAX        AtmAddrPrefix
        MAX-ACCESS    not-accessible
        STATUS              deprecated
        DESCRIPTION
            "The ATM End System Address prefix for the summary."
        ::= { pnniSummaryEntry 1 }

pnniSummaryPrefixLength OBJECT-TYPE
        SYNTAX        PnniPrefixLength
        MAX-ACCESS    not-accessible
        STATUS        deprecated
        DESCRIPTION
            "The prefix length for the summary."
        ::= { pnniSummaryEntry 2 }

pnniSummaryType OBJECT-TYPE
        SYNTAX        INTEGER { internal(1), exterior(2) }
        MAX-ACCESS    read-create
        STATUS        deprecated
        DESCRIPTION
            "The type (e.g. internal or exterior) of summary being
                      described."
        DEFVAL { internal }
        ::= { pnniSummaryEntry 3 }

pnniSummarySuppress OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        deprecated
```

```
        DESCRIPTION
            "Determines what is done with addresses that are being
             summarized by the instance. The default value (e.g. false)
             will indicate that the summary should propagate into the
             peer group. Network Management will be able to set the
             value of this attribute to `suppress' (e.g. true), which
             suppresses the summary and any reachable addresses it
             summarizes from being advertised into the peer group."
        DEFVAL { false }
        ::= { pnniSummaryEntry 4 }

pnniSummaryState OBJECT-TYPE
        SYNTAX        INTEGER {
                                advertising(1),
                                suppressing(2),
                                inactive(3)
                                }
        MAX-ACCESS    read-only
        STATUS        deprecated
        DESCRIPTION
            "Indicates whether the summary is deprecatedly being advertised
             by the node within the local switching system into its peer
             group."
        ::= { pnniSummaryEntry 5 }

pnniSummaryRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        deprecated
        DESCRIPTION
            "To create, delete, activate and de-activate a summary."
        ::= { pnniSummaryEntry 6 }
```

96) Annex H; deprecate the pnniSummaryLgnGroup in the Conformance Information.

```
pnniSummaryLgnGroup OBJECT-GROUP
       OBJECTS {
      pnniSummaryType,
      pnniSummarySuppress,
      pnniSummaryState,
      pnniSummaryRowStatus
      }
        STATUS deprecated
        DESCRIPTION
      "A collection of PNNI objects required for controlling address
summarization."
        ::= { pnniMIBGroups 10 }
```

97) Annex H; add a new table pnniSummaryAddressTable to the MIB.

```
-- Summary address table

pnniSummaryAddressTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniSummaryAddressEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A list of the summary address prefixes that may
             be advertised by the specified logical PNNI entity."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        ::= { pnniMIBObjects 20 }

pnniSummaryAddressEntry OBJECT-TYPE
```

```
        SYNTAX          PnniSummaryAddressEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "An entry in the table, containing summary address prefix
             information in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        INDEX           { pnniNodeIndex,
                          pnniSummaryAddressType,
                          pnniSummaryAddressAddress,
                          pnniSummaryAddressPrefixLength }
        ::= { pnniSummaryAddressTable 1 }

PnniSummaryAddressEntry ::=
        SEQUENCE {
        pnniSummaryAddressType                  INTEGER,
            pnniSummaryAddressAddress               AtmAddrPrefix,
            pnniSummaryAddressPrefixLength          PnniPrefixLength,
            pnniSummaryAddressSuppress              TruthValue,
            pnniSummaryAddressState                 INTEGER,
            pnniSummaryAddressRowStatus             RowStatus
        }

pnniSummaryAddressType OBJECT-TYPE
        SYNTAX          INTEGER { internal(1), exterior(2) }
        MAX-ACCESS  not-accessible
        STATUS          current
        DESCRIPTION
            "The type (e.g. internal or exterior) of summary being
                        described."
        ::= { pnniSummaryAddressEntry 1 }

pnniSummaryAddressAddress OBJECT-TYPE
        SYNTAX          AtmAddrPrefix
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "The ATM End System Address prefix for the summary."
        ::= { pnniSummaryAddressEntry 2 }

pnniSummaryAddressPrefixLength OBJECT-TYPE
        SYNTAX          PnniPrefixLength
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
            "The prefix length for the summary."
        ::= { pnniSummaryAddressEntry 3 }

pnniSummaryAddressSuppress OBJECT-TYPE
        SYNTAX          TruthValue
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
            "Determines what is done with addresses that are being
             summarized by the instance. The default value (e.g. false)
             will indicate that the summary should propagate into the
             peer group. Network Management will be able to set the
             value of this attribute to `suppress' (e.g. true), which
             suppresses the summary and any reachable addresses it
             summarizes from being advertised into the peer group."
        DEFVAL { false }
        ::= { pnniSummaryAddressEntry 4 }

pnniSummaryAddressState OBJECT-TYPE
```

```
        SYNTAX          INTEGER {
                                advertising(1),
                                suppressing(2),
                                inactive(3)
                                }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
            "Indicates whether the summary is currently being advertised
             by the node within the local switching system into its peer
             group."
        ::= { pnniSummaryAddressEntry 5 }

pnniSummaryAddressRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
            "To create, delete, activate and de-activate a summary."
        ::= { pnniSummaryAddressEntry 6 }
```

98) Annex H, pnniIfNodeIndex; add range, (1..65535), and add the following text,"The value zero is not a valid value.", to the end of the DESCRIPTION.

```
pnniIfNodeIndex OBJECT-TYPE
        SYNTAX          PnniNodeIndex (1..65535)
        MAX-ACCESS      read-write
        STATUS          current
        DESCRIPTION
            "Identifies the node within the switching system that the
             interface is directly attached to. The value zero is not
             a valid value."
        DEFVAL { 1 }
        ::= { pnniIfEntry 1 }
```

99) Annex H, pnniIfPortId; add text to end of DESCRIPTION.

```
pnniIfPortId OBJECT-TYPE
        SYNTAX          PnniPortId
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
            "The Port Identifier of the port as selected by the PNNI
             protocol entity for the given interface.  This value has
             meaning only within the context of the node to which the
             port is attached.  The distinguished value zero indicates
             that no PNNI Port Identifier has been assigned for this
             interface (for example, this value may be used when the
             interface is not running PNNI)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.4"
        ::= { pnniIfEntry 2 }
```

100) Annex H; change the range of the pnniIfAdmWeightCbr, pnniIfAdmWeightRtVbr, pnniIfAdmWeightNrtVbr, pnniIfAdmWeightAbr, and pnniIfAdmWeightUbr objects to (1..16777215).

101) Annex H; delete the range from pnniMapMetricsTag object and add text to end of DESCRIPTION.

```
pnniMapMetricsTag OBJECT-TYPE
        SYNTAX          PnniMetricsTag ~~(1..MAX)~~
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
            "An arbitrary integer that is used to associate a set of
             traffic parameters that are always advertised together.
```

```
            Within this set, the parameters are distinguished by the
            service categories and direction to which a set of
            parameters apply.  This value is used as an index into
            the pnniMetricsTable.  The distinguished value zero
            indicates that no metrics are associated with the link or
            nodal connectivity."
        ::= { pnniMapEntry 11 }
```

102) Annex H; change range of the pnniMapAddrIndex, pnniMetricsTag, and pnniMetricsIndex, objects to 1..2147483647.

103) Annex H; change the range of the pnniMetricsAdminWeight to (1..16777215) and delete the sentence, "If this metric is not used, its value should be set to 0xFFFFFFFF." from the DESCRIPTION.

104) Annex H; change the range, "MAX" of the pnniRouteNodeDTL and pnniDTLIndex objects to "2147483647".

105) Annex H; add a new pnniSummaryAddressLgnGroup to the Conformance Information.

```
pnniSummaryAddressLgnGroup OBJECT-GROUP
        OBJECTS {
        pnniSummaryAddressSuppress,
        pnniSummaryAddressState,
        pnniSummaryAddressRowStatus
        }
          STATUS current
          DESCRIPTION
        "A collection of PNNI objects required for controlling address
summarization."
          ::= { pnniMIBGroups 31 }
```

106) The new Annex H as modified (by items 93 - 105 above) follows.

## 14. Annex H: The PNNI Management Information Base

```
PNNI-MIB DEFINITIONS ::= BEGIN

        IMPORTS
                MODULE-IDENTITY, OBJECT-TYPE, OBJECT-IDENTITY,
                Counter32, Gauge32, Integer32, enterprises
                        FROM SNMPv2-SMI
                TEXTUAL-CONVENTION, RowStatus, DisplayString,
                TimeStamp, TruthValue
                        FROM SNMPv2-TC
                InterfaceIndex, ifIndex
                        FROM IF-MIB
                AtmTrafficDescrParamIndex
                        FROM ATM-MIB
                MODULE-COMPLIANCE, OBJECT-GROUP
                        FROM SNMPv2-CONF;


pnniMIB MODULE-IDENTITY
        LAST-UPDATED    "9705010000Z"
        ORGANIZATION    "The ATM Forum"
        CONTACT-INFO
            "The ATM Forum
             2570 West El Camino Real, Suite 304
             Mountain View, CA 94040-1313 USA
             Phone: +1 415-949-6700
             Fax:   +1 415-949-6705
             info@atmforum.com"
        DESCRIPTION
            "The MIB module for managing ATM Forum PNNI routing."
        REVISION        "9705010000Z"
        DESCRIPTION
            "Updated version of the PNNI MIB released with the PNNI
             V1.0 Errata and PICS (af-pnni-0081.000)."
        REVISION        "9602270000Z"
        DESCRIPTION
            "Initial version of the MIB for monitoring and controlling
             PNNI routing."
        ::= { atmfPnni 1 }

-- The object identifier subtree for ATM Forum PNNI MIBs

atmForum        OBJECT IDENTIFIER ::= { enterprises 353 }
atmForumNetworkManagement       OBJECT IDENTIFIER ::= { atmForum 5 }
atmfPnni        OBJECT IDENTIFIER ::= { atmForumNetworkManagement 4 }


pnniMIBObjects OBJECT IDENTIFIER ::= { pnniMIB 1 }


    Unsigned32 ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "This definition, which is in compliance with RFC 1902, is a
             temporary inclusion in the PNNI MIB until such time as MIB
             compilers are upgraded and thereby can accept references to
             the new definitions in RFC 1902."
        REFERENCE
            "RFC 1902"
        SYNTAX        Gauge32


    PnniAtmAddr ::= TEXTUAL-CONVENTION
        STATUS        current
```

```
        DESCRIPTION
            "The ATM address used by the network entity.  The address
             types are: no address (0 octets), and NSAP (20 octets)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.2"
        SYNTAX        OCTET STRING (SIZE(0|20))


    PnniNodeIndex ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "An index that identifies a logical PNNI entity within the
             managed system.

             The distinguished value zero indicates the null instance or
             no instance in the PnniNodeCfgParentNodeIndex.  In all
             other cases, the distinguished value zero indicates a
             logical entity within the switching system that manages
             routes only over non-PNNI interfaces.

             By default, only the node identified by node index one is
             created, and all PNNI interfaces are associated with that
             node."
        SYNTAX        Integer32 (0..65535)


    PnniNodeId ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "A PNNI node ID - this is used to identify the logical PNNI
             node."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.3"
        SYNTAX        OCTET STRING (SIZE(22))


    PnniPortId ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "A PNNI port ID - this is used to identify a point of
             attachment of a logical link to a given logical node.

             The values 0 and 0xffffffff have special meanings in
             certain contexts and do not identify a specific port.

             The distinguished value 0 indicates that no port is
             specified."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.4"
        SYNTAX        Unsigned32


    PnniAggrToken ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "A PNNI aggregation token - this is used to determine which
             links to a given neighbor node are to be aggregated and
             advertised as a single logical link."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.5"
        SYNTAX        Unsigned32


    PnniPeerGroupId ::= TEXTUAL-CONVENTION
        STATUS        current
```

```
        DESCRIPTION
            "A PNNI peer group ID."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.2"
        SYNTAX        OCTET STRING (SIZE(14))


    PnniLevel ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "A PNNI routing level indicator."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.1"
        SYNTAX        Integer32 (0..104)


    PnniSvccRccIndex ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "The value of this object identifies the SVCC-based RCC for
             which the entry contains management information."
        SYNTAX        Integer32


    AtmAddrPrefix ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "A prefix of one or more ATM End System Addresses.  The
             significant portion of a prefix is padded with zeros on the
             right to fill 19 octets."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.2"
        SYNTAX        OCTET STRING (SIZE(19))


    PnniPrefixLength ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "The number of bits that are significant in an ATM address
             prefix used by PNNI."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.2"
        SYNTAX        Integer32 (0..152)


    PnniMetricsTag ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "An index into the pnniMetricsTable.  The suffix tag is used
             to indicate that there may be many related entries in the
             table further discriminated by other index terms.  The
             distinguished value zero indicates that no metrics are
             associated with the described entity."
        SYNTAX        Integer32 (0..2147483647)


    ServiceCategory ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "Indicates the service category."
        REFERENCE
            "ATM Forum Traffic Management 4.0 Section 2"
        SYNTAX        INTEGER { other(1),
                                cbr(2),
                                rtVbr(3),
```

```
                                nrtVbr(4),
                                abr(5),
                                ubr(6) }


    ClpType ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "Indicates the CLP type of a traffic stream."
        SYNTAX        INTEGER { clpEqual0(1), clpEqual0Or1(2) }


    TnsType ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "Indicates the type of network identification of a
             specified transit network."
        REFERENCE
            "ATM Forum UNI Signalling 4.0 Section 2 4.5.22/Q.2931"
        SYNTAX        INTEGER { nationalNetworkIdentification(2),
                                other(8) }


    TnsPlan ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "Indicates the network identification plan of a
             specified transit network."
        REFERENCE
            "ATM Forum UNI Signalling 4.0 Section 2 4.5.22/Q.2931"
        SYNTAX        INTEGER { carrierIdentificationCode(1),
                                other(16) }

    PnniVersion ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "Indicates a version of the PNNI protocol."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.6.1"
        SYNTAX        INTEGER { unsupported(1), version1point0(2) }


    PnniHelloState ::= TEXTUAL-CONVENTION
        STATUS        current
        DESCRIPTION
            "The state of an instance of the PNNI Hello State machine."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.6.2.1.2"
        SYNTAX        INTEGER {
                                notApplicable(1),
                                down(2),
                                attempt(3),
                                oneWayInside(4),
                                twoWayInside(5),
                                oneWayOutside(6),
                                twoWayOutside(7),
                                commonOutside(8)
                                }


    zeroDotZero   OBJECT-IDENTITY
        STATUS        current
        DESCRIPTION
            "A value used for null identifiers.
```

```
             This definition, which is in compliance with RFC 1902, is a
             temporary inclusion in the PNNI MIB until such time as MIB
             compilers are upgraded and thereby can accept references to
             the new definitions in RFC 1902."
         REFERENCE
             "RFC 1902"
         ::= { 0 0 }


-- the base group

pnniBaseGroup OBJECT IDENTIFIER ::= { pnniMIBObjects 1 }

pnniHighestVersion OBJECT-TYPE
         SYNTAX        PnniVersion
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "The highest version of the PNNI protocol that the
              software in this switching system is capable of executing."
         REFERENCE
             "ATM Forum PNNI 1.0 Section 5.6.1"
         ::= { pnniBaseGroup 1 }

pnniLowestVersion OBJECT-TYPE
         SYNTAX        PnniVersion
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "The lowest version of the PNNI Protocol that the
              software in this switching system is capable of executing."
         REFERENCE
             "ATM Forum PNNI 1.0 Section 5.6.1"
         ::= { pnniBaseGroup 2 }

pnniDtlCountOriginator OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "The total number of DTL stacks that this switching system
              has originated as the DTLOriginator and placed into
              signalling messages. This includes the initial DTL stacks
              computed by this system as well as any alternate route
              (second, third choice etc.) DTL stacks computed by this
              switching system in response to crankbacks."
         ::= { pnniBaseGroup 3 }

pnniDtlCountBorder OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "The number of partial DTL stacks that this switching system
              has added into signalling messages as an entry border node.
              This includes the initial partial DTL stacks computed by
              this system as well as any alternate route (second, third
              choice etc.) partial DTL stacks computed by this switching
              system in response to crankbacks."
         ::= { pnniBaseGroup 4 }

pnniCrankbackCountOriginator OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
```

```
        DESCRIPTION
            "The count of the total number of connection setup messages
             including DTL stacks originated by this switching system
             that have cranked back to this switching system at all
             levels of the hierarchy."
        ::= { pnniBaseGroup 5 }

pnniCrankbackCountBorder OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The count of the total number of connection setup messages
             including DTLs added by this switching system as an entry
             border node that have cranked back to this switching system
             at all levels of the hierarchy. This count does not include
             Crankbacks for which this switching system was not the
             crankback destination, only those crankbacks that were
             directed to this switching system are counted here."
        ::= { pnniBaseGroup 6 }

pnniAltRouteCountOriginator OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of alternate DTL stacks that this
             switching system has computed and placed into
             signalling messages as the DTLOriginator."
        ::= { pnniBaseGroup 7 }

pnniAltRouteCountBorder OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of alternate partial DTL stacks that this
             switching system has computed and placed into signalling
             messages as an entry border node."
        ::= { pnniBaseGroup 8 }

pnniRouteFailCountOriginator OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of times where the switching system failed
             to compute a viable DTL stack as the DTLOriginator for some
             call.  It indicates the number of times a call was cleared
             from this switching system due to originator routing
             failure."
        ::= { pnniBaseGroup 9 }

pnniRouteFailCountBorder OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of times where the switching system failed
             to compute a viable partial DTL stack as an entry border
             node for some call.  It indicates the number of times a
             call was either cleared or cranked back from this switching
             system due to border routing failure."
        ::= { pnniBaseGroup 10 }
```

```
pnniRouteFailUnreachableOriginator OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of times where the switching system failed
             to compute a viable DTL stack as the DTLOriginator because
             the destination was unreachable, i.e., those calls that are
             cleared with cause #2 `specified transit network
             unreachable' or cause #3 `destination unreachable' in the
             cause IE."
        ::= { pnniBaseGroup 11 }

pnniRouteFailUnreachableBorder OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The total number of times where the switching system failed
             to compute a viable partial DTL stack as an entry border
             node because the target of the path calculation was
             unreachable, i.e., those calls that are cleared or cranked
             back with cause #2 `specified transit network unreachable'
             or cause #3 `destination unreachable' in the cause IE."
        ::= { pnniBaseGroup 12 }


-- node table

pnniNodeTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNodeEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniNodeTable collects attributes that affect the
             operation of a PNNI logical node.

             There is a single row in this table for each PNNI peer
             group that the managed system is expected or eligible
             to become a member of."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex F"
        ::= { pnniMIBObjects 2 }

pnniNodeEntry OBJECT-TYPE
        SYNTAX        PnniNodeEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a PNNI
             logical node in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex F"
        INDEX         { pnniNodeIndex }
        ::= { pnniNodeTable 1 }

PnniNodeEntry ::=
        SEQUENCE {
                pnniNodeIndex           PnniNodeIndex,
                pnniNodeLevel           PnniLevel,
                pnniNodeId              PnniNodeId,
                pnniNodeLowest          TruthValue,
                pnniNodeAdminStatus     INTEGER,
                pnniNodeOperStatus      INTEGER,
                pnniNodeDomainName      DisplayString,
```

```
                pnniNodeAtmAddress      PnniAtmAddr,
                pnniNodePeerGroupId     PnniPeerGroupId,
                pnniNodeRestrictedTransit       TruthValue,
                pnniNodeComplexRep      TruthValue,
                pnniNodeRestrictedBranching     TruthValue,
                pnniNodeDatabaseOverload        TruthValue,
                pnniNodePtses           Gauge32,
                pnniNodeRowStatus       RowStatus
                }

pnniNodeIndex OBJECT-TYPE
        SYNTAX        PnniNodeIndex
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A value assigned to a node in this switching system that
             uniquely identifies it in the MIB."
        ::= { pnniNodeEntry 1 }

pnniNodeLevel OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The level of PNNI hierarchy at which this node exists. This
             attribute is used to determine the default node ID and the
             default peer group ID for this node. This object may only
             be written when pnniNodeAdminStatus has the value down."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.1, Annex F"
        DEFVAL { 96 }
        ::= { pnniNodeEntry 2 }

pnniNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The value the switching system is using to represent
             itself as this node. This object may only be written when
             pnniNodeAdminStatus has the value down.

             If pnniNodeLowest is true, then the default node ID takes
             the form defined in Section 5.3.3 for lowest level nodes,
             with the first octet equal to pnniNodeLevel, the second
             octet equal to 160, and the last 20 octets equal to
             pnniNodeAtmAddress.

             If pnniNodeLowest is false, then the default
             node ID takes the form defined in Section 5.3.3 for logical
             group nodes, with the first octet equal to pnniNodeLevel,
             the next fourteen octets equal to the value of
             pnniNodePeerGroupId for the child node whose election as
             PGL causes this LGN to be instantiated, the next six octets
             equal to the ESI of pnniNodeAtmAddress, and the last octet
             equal to zero."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.3, Annex F"
        ::= { pnniNodeEntry 3 }

pnniNodeLowest OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
```

```
            "Indicates whether this node acts as a lowest level node or
             whether this node is a logical group node that becomes
             active when one of the other nodes in this switching system
             becomes a peer group leader.  The value 'false' must not be
             used with nodes that are not PGL/LGN capable.

             This object may only be
             written when pnniNodeAdminStatus has the value down."
        DEFVAL { true }
        ::= { pnniNodeEntry 4 }

pnniNodeAdminStatus OBJECT-TYPE
        SYNTAX        INTEGER { up(1), down(2) }
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Indicates whether the administrative status of the node is
             up (the node is allowed to become active) or down (the node
             is forced to be inactive).

             When pnniNodeAdminStatus is down, then pnniNodeOperStatus
             must also be down."
        DEFVAL { up }
        ::= { pnniNodeEntry 5 }

pnniNodeOperStatus OBJECT-TYPE
        SYNTAX        INTEGER { up(1), down(2) }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the node is active or whether the node
             has yet to become operational.  When the value is down, all
             state has been cleared from the node and the node is not
             communicating with any of its neighbor nodes."
        ::= { pnniNodeEntry 6 }

pnniNodeDomainName OBJECT-TYPE
        SYNTAX        DisplayString
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The name of the PNNI routing
             domain in which this node participates.  All lowest-level
             PNNI nodes with the same pnniNodeDomainName are presumed to
             be connected."
        DEFVAL { "" }
        ::= { pnniNodeEntry 7 }

pnniNodeAtmAddress OBJECT-TYPE
        SYNTAX        PnniAtmAddr
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "This node's ATM End System Address.  Remote systems wishing
             to exchange PNNI protocol packets with this node should
             direct packets or calls to this address.

             This attribute may only be written when pnniNodeAdminStatus
             has the value down."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.2.2"
        ::= { pnniNodeEntry 8 }

pnniNodePeerGroupId OBJECT-TYPE
        SYNTAX        PnniPeerGroupId
```

```
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The Peer Group Identifier of the peer group that the given
             node is to become a member of.

             The default value of this attribute has the first octet
             equal to pnniNodeLevel, the next pnniNodeLevel bits equal
             to the pnniNodeLevel bits starting from the third octet of
             pnniNodeId, and the remainder padded with zeros.

             This object may only be written when pnniNodeAdminStatus
             has the value down."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.2, Annex F"
        ::= { pnniNodeEntry 9 }

pnniNodeRestrictedTransit OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Specifies whether the node is restricted to not allowing
             support of SVCs transiting this node.  This attribute
             determines the setting of the restricted transit bit in the
             nodal information group originated by this node."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.2.3"
        DEFVAL { false }
        ::= { pnniNodeEntry 10 }

pnniNodeComplexRep OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Specifies whether this node uses the complex node
             representation.  A value of `true' indicates that the
             complex node representation is used, whereas a value of
             `false' indicates that the simple node representation is
             used.  This attribute determines the setting of the nodal
             representation bit in the nodal information group
             originated by this node."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.2.3"
        ::= { pnniNodeEntry 11 }

pnniNodeRestrictedBranching  OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the node is able to support additional
             point-to-multipoint branches.  A value of 'false' indicates
             that additional branches can be supported, and a value of
             'true' indicates that additional branches cannot be
             supported.  This attribute reflects the setting of the
             restricted branching bit in the nodal information group
             originated by this node."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.2.3"
        ::= { pnniNodeEntry 12}

pnniNodeDatabaseOverload OBJECT-TYPE
        SYNTAX        TruthValue
```

```
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Specifies whether the node is currently operating in
             topology database overload state.  This attribute has the
             same value as the Non-transit for PGL Election bit in the
             nodal information group originated by this node."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.2.3"
        ::= { pnniNodeEntry 13 }

pnniNodePtses OBJECT-TYPE
        SYNTAX        Gauge32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Gauges the total number of PTSEs currently in this
             node's topology database(s)."
        ::= { pnniNodeEntry 14 }

pnniNodeRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "To create, delete, activate and de-activate a Node."
        ::= { pnniNodeEntry 15 }


-- PGL election table

pnniNodePglTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNodePglEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "Peer group leader election information for a PNNI node in
             this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.1"
        ::= { pnniMIBObjects 3 }

pnniNodePglEntry OBJECT-TYPE
        SYNTAX        PnniNodePglEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing PGL election information
             of a PNNI logical node in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.1"
        AUGMENTS      { pnniNodeEntry }
        ::= { pnniNodePglTable 1 }

PnniNodePglEntry ::=
        SEQUENCE {
                pnniNodePglLeadershipPriority   INTEGER,
                pnniNodeCfgParentNodeIndex      PnniNodeIndex,
                pnniNodePglInitTime             Integer32,
                pnniNodePglOverrideDelay        Integer32,
                pnniNodePglReelectTime          Integer32,
                pnniNodePglState                INTEGER,
                pnniNodePreferredPgl            PnniNodeId,
                pnniNodePeerGroupLeader         PnniNodeId,
                pnniNodePglTimeStamp            TimeStamp,
```

```
                pnniNodeActiveParentNodeId      PnniNodeId
                }

pnniNodePglLeadershipPriority OBJECT-TYPE
        SYNTAX        INTEGER (0..205)
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The Leadership priority value this node should advertise in
             its nodal information group for the given peer group.  Only
             the value zero can be used with nodes that are not PGL/LGN
             capable.  If there is no configured parent node index or no
             corresponding entry in the pnniNodeTable, then the
             advertised leadership priority is zero regardless of this
             value."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.1.2"
        DEFVAL { 0 }
        ::= { pnniNodePglEntry 1 }

pnniNodeCfgParentNodeIndex OBJECT-TYPE
        SYNTAX        PnniNodeIndex
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The local node index used to identify the node that will
             represent this peer group at the next higher level of
             hierarchy, if this node becomes peer group leader.  The
             value 0 indicates that there is no parent node."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex F"
        DEFVAL { 0 }
        ::= { pnniNodePglEntry 2 }

pnniNodePglInitTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time in seconds this node will delay
             advertising its choice of preferred PGL after having
             initialized operation and reached the full state with at
             least one neighbor in the peer group."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G PGLInitTime"
        DEFVAL  { 15 }
        ::= { pnniNodePglEntry 3 }

pnniNodePglOverrideDelay OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time in seconds a node will wait for itself
             to be declared the preferred PGL by unanimous agreement
             among its peers.  In the absence of unanimous agreement
             this will be the amount of time that will pass before this
             node considers a two thirds majority as sufficient
             agreement to declare itself peer group leader, abandoning
             the attempt to get unanimous agreement."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G OverrideDelay"
        DEFVAL  { 30 }
```

```
        ::= { pnniNodePglEntry 4 }

pnniNodePglReelectTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time in seconds after losing connectivity to
             the current peer group leader, that this node will wait
             before re-starting the process of electing a new peer group
             leader."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G ReElectionInterval"
        DEFVAL  { 15 }
        ::= { pnniNodePglEntry 5 }

pnniNodePglState OBJECT-TYPE
        SYNTAX        INTEGER {
                                starting(1),
                                awaiting(2),
                                awaitingFull(3),
                                initialDelay(4),
                                calculating(5),
                                awaitUnanimity(6),
                                operPgl(7),
                                operNotPgl(8),
                                hungElection(9),
                                awaitReElection(10)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates the state that this node is in with respect to
             the Peer Group Leader election that takes place in the
             node's peer group. The values are enumerated in the Peer
             Group Leader State Machine."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.1.1.2"
        ::= { pnniNodePglEntry 6 }

pnniNodePreferredPgl OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Node ID of
             the node which the local node believes should be or become
             the peer group leader.  This is also the value the local
             node is currently advertising in the `Preferred Peer Group
             Leader Node ID' field of its nodal information group within
             the given peer group.  If a Preferred PGL has not been
             chosen, this attribute's value is set to (all) zero(s)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.1.1.6"
        ::= { pnniNodePglEntry 7 }

pnniNodePeerGroupLeader OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Node Identifier of the node which is currently
             operating as peer group leader of the peer group this node
             belongs to. If a PGL has not been elected, this attribute's
```

```
             value is set to (all) zero(s)."
        ::= { pnniNodePglEntry 8 }

pnniNodePglTimeStamp OBJECT-TYPE
        SYNTAX        TimeStamp
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The time at which the current Peer Group Leader established
             itself."
        ::= { pnniNodePglEntry 9 }

pnniNodeActiveParentNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Node Identifier value being used by the Peer Group
             Leader to represent this peer group at the next higher
             level of the hierarchy. If this node is at the highest
             level of the hierarchy or if no PGL has yet been elected
             the PNNI Protocol Entity sets the value of this attribute
             to (all) zero(s)."
        ::= { pnniNodePglEntry 10 }


-- initial timer values table

pnniNodeTimerTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNodeTimerEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table of initial PNNI timer values and significant
             change thresholds."
        ::= { pnniMIBObjects 4 }

pnniNodeTimerEntry OBJECT-TYPE
        SYNTAX        PnniNodeTimerEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing initial PNNI timer values
             and significant change thresholds of a PNNI logical node in
             this switching system."
        AUGMENTS      { pnniNodeEntry }
        ::= { pnniNodeTimerTable 1 }

PnniNodeTimerEntry ::=
        SEQUENCE {
                pnniNodePtseHolddown            Integer32,
                pnniNodeHelloHolddown           Integer32,
                pnniNodeHelloInterval           Integer32,
                pnniNodeHelloInactivityFactor   Integer32,
                pnniNodeHlinkInact              Integer32,
                pnniNodePtseRefreshInterval     Integer32,
                pnniNodePtseLifetimeFactor      INTEGER,
                pnniNodeRxmtInterval            Integer32,
                pnniNodePeerDelayedAckInterval  Integer32,
                pnniNodeAvcrPm                  INTEGER,
                pnniNodeAvcrMt                  INTEGER,
                pnniNodeCdvPm                   INTEGER,
                pnniNodeCtdPm                   INTEGER
                }
```

```
pnniNodePtseHolddown OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "100 milliseconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The initial value for the PTSE hold down timer that will be
             used by the given node to limit the rate at which it can
             re-originate PTSEs. It must be a positive non-zero number."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G MinPTSEInterval"
        DEFVAL { 10 }
        ::= { pnniNodeTimerEntry 1 }

pnniNodeHelloHolddown OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "100 milliseconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The initial value for the Hello hold down timer that will
             be used by the given node to limit the rate at which it
             sends Hellos. It must be a positive non-zero number."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G MinHelloInterval"
        DEFVAL { 10 }
        ::= { pnniNodeTimerEntry 2 }

pnniNodeHelloInterval OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The initial value for the Hello Timer.
             In the absence of triggered Hellos, this node will send one
             Hello packet on each of its ports on this interval."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G HelloInterval"
        DEFVAL { 15 }
        ::= { pnniNodeTimerEntry 3 }

pnniNodeHelloInactivityFactor OBJECT-TYPE
        SYNTAX        Integer32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The value for the Hello Inactivity factor that this
             node will use to determine when a neighbor has gone down."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G InactivityFactor"
        DEFVAL { 5 }
        ::= { pnniNodeTimerEntry 4 }

pnniNodeHlinkInact OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time a node will continue to
             advertise a horizontal (logical) link for which it has
             not received and processed a LGN Horizontal Link
             information group."
        REFERENCE
```

```
            "ATM Forum PNNI 1.0 Annex G HorizontalLinkInactivityTime"
        DEFVAL { 120 }
        ::= { pnniNodeTimerEntry 5 }

pnniNodePtseRefreshInterval OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The initial value for the Refresh timer that this node will
             use to drive (re-)origination of PTSEs in the absence of
             triggered updates."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G PTSERefreshInterval"
        DEFVAL  { 1800 }
        ::= { pnniNodeTimerEntry 6 }

pnniNodePtseLifetimeFactor OBJECT-TYPE
        SYNTAX        INTEGER (101..1000)
        UNITS         "percent"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The value for the lifetime multiplier, expressed as a
             percentage.  The result of multiplying the
             pnniNodePtseRefreshInterval attribute value by this
             attribute value is used as the initial lifetime that this
             node places into self-originated PTSEs."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G PTSELifetimeFactor"
        DEFVAL  { 200 }
        ::= { pnniNodeTimerEntry 7 }

pnniNodeRxmtInterval OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The period between retransmissions of unacknowledged
             Database Summary packets, PTSE Request packets, and PTSPs."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G DSRxmtInterval,
             RequestRxmtInterval, PTSERetransmissionInterval"
        DEFVAL { 5 }
        ::= { pnniNodeTimerEntry 8 }

pnniNodePeerDelayedAckInterval OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "100 milliseconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The minimum amount of time between transmissions of
             delayed PTSE acknowledgement packets."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G PeerDelayedAckInterval,
             Appendix G"
        DEFVAL { 10 }
        ::= { pnniNodeTimerEntry 9 }

pnniNodeAvcrPm OBJECT-TYPE
        SYNTAX        INTEGER (1..99)
        UNITS         "percent"
```

```
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The proportional multiplier used in the algorithms that
             determine significant change for AvCR parameters, expressed
             as a percentage."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.5.2.5.4, Annex G AvCR_PM"
        DEFVAL  { 50 }
        ::= { pnniNodeTimerEntry 10 }

pnniNodeAvcrMt OBJECT-TYPE
        SYNTAX        INTEGER (1..99)
        UNITS         "percent"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The minimum threshold used in the algorithms that determine
             significant change for AvCR parameters, expressed as a
             percentage."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.5.2.5.4, Annex G AvCR_mT"
        DEFVAL  { 3 }
        ::= { pnniNodeTimerEntry 11 }

pnniNodeCdvPm OBJECT-TYPE
        SYNTAX        INTEGER (1..99)
        UNITS         "percent"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The proportional multiplier used in the algorithms that
             determine significant change for CDV metrics, expressed as
             a percentage."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.5.2.5.6, Annex G CDV_PM"
        DEFVAL  { 25 }
        ::= { pnniNodeTimerEntry 12 }

pnniNodeCtdPm OBJECT-TYPE
        SYNTAX        INTEGER (1..99)
        UNITS         "percent"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The proportional multiplier used in the algorithms that
             determine significant change for CTD metrics, expressed as
             a percentage."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.5.2.5.5, Annex G maxCTD_PM"
        DEFVAL  { 50 }
        ::= { pnniNodeTimerEntry 13 }


-- nodal SVCC-based RCC variables table

pnniNodeSvccTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNodeSvccEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table of variables related to SVCC-based routing control
             channels."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.5"
```

```
        ::= { pnniMIBObjects 5 }

pnniNodeSvccEntry OBJECT-TYPE
        SYNTAX        PnniNodeSvccEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing SVCC-based RCC variables
             of a PNNI logical node in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.5"
        AUGMENTS      { pnniNodeEntry }
        ::= { pnniNodeSvccTable 1 }

PnniNodeSvccEntry ::=
        SEQUENCE {
                pnniNodeSvccInitTime                    Integer32,
                pnniNodeSvccRetryTime                   Integer32,
                pnniNodeSvccCallingIntegrityTime        Integer32,
                pnniNodeSvccCalledIntegrityTime         Integer32,
           pnniNodeSvccTrafficDescriptorIndex  AtmTrafficDescrParamIndex
                }

pnniNodeSvccInitTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time this node will delay initiating
             establishment of an SVCC to a neighbor with a numerically
             lower ATM address, after determining that such an SVCC
             should be established."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G InitialLGNSVCTimeout"
        DEFVAL { 4 }
        ::= { pnniNodeSvccEntry 1 }

pnniNodeSvccRetryTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time this node will delay after an apparently
             still necessary and viable SVCC-based RCC is unexpectedly
             torn down, before attempting to re-establish it."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G RetryLGNSVCTimeout"
        DEFVAL { 30 }
        ::= { pnniNodeSvccEntry 2 }

pnniNodeSvccCallingIntegrityTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time this node will wait for an SVCC, which
             it has initiated establishment of as the calling party, to
             become fully established before giving up and tearing it
             down."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G SVCCallingIntegrityTime"
        DEFVAL { 35 }
```

```
        ::= { pnniNodeSvccEntry 3 }

pnniNodeSvccCalledIntegrityTime OBJECT-TYPE
        SYNTAX        Integer32
        UNITS         "seconds"
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The amount of time this node will wait for an SVCC, which
             it has decided to accept as the called party, to become
             fully established before giving up and tearing it down."
        REFERENCE
            "ATM Forum PNNI 1.0 Annex G SVCCalledIntegrityTime"
        DEFVAL { 50 }
        ::= { pnniNodeSvccEntry 4 }

pnniNodeSvccTrafficDescriptorIndex OBJECT-TYPE
        SYNTAX        AtmTrafficDescrParamIndex
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An index into the atmTrafficDescrParamTable defined in
             RFC 1695.  This traffic descriptor is used when
             establishing switched virtual channels for use as
             SVCC-based RCCs to/from PNNI logical group nodes."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.5.2, Annex G
             RCCMaximumBurstSize, RCCPeakCellRate,
             RCCSustainableCellRate"
        ::= { pnniNodeSvccEntry 5 }


-- scope mapping table

pnniScopeMappingTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniScopeMappingEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniScopeTable contains the mappings of membership and
             connection scope from organizational scope values (used at
             UNI interfaces) to PNNI scope (i.e. in terms of PNNI
             routing level indicators)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.6"
        ::= { pnniMIBObjects 6 }

pnniScopeMappingEntry OBJECT-TYPE
        SYNTAX        PnniScopeMappingEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing scope mapping information
             for a PNNI logical node in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.6"
        AUGMENTS      { pnniNodeEntry }
        ::= { pnniScopeMappingTable 1 }

PnniScopeMappingEntry ::=
        SEQUENCE {
                pnniScopeLocalNetwork           PnniLevel,
                pnniScopeLocalNetworkPlusOne    PnniLevel,
                pnniScopeLocalNetworkPlusTwo    PnniLevel,
                pnniScopeSiteMinusOne           PnniLevel,
```

```
                pnniScopeIntraSite              PnniLevel,
                pnniScopeSitePlusOne            PnniLevel,
                pnniScopeOrganizationMinusOne   PnniLevel,
                pnniScopeIntraOrganization      PnniLevel,
                pnniScopeOrganizationPlusOne    PnniLevel,
                pnniScopeCommunityMinusOne      PnniLevel,
                pnniScopeIntraCommunity         PnniLevel,
                pnniScopeCommunityPlusOne       PnniLevel,
                pnniScopeRegional               PnniLevel,
                pnniScopeInterRegional          PnniLevel,
                pnniScopeGlobal                 PnniLevel
                }

pnniScopeLocalNetwork OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value localNetwork(1)."
        DEFVAL { 96 }
        ::= { pnniScopeMappingEntry 1 }

pnniScopeLocalNetworkPlusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value localNetworkPlusOne(2)."
        DEFVAL { 96 }
        ::= { pnniScopeMappingEntry 2 }

pnniScopeLocalNetworkPlusTwo OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value localNetworkPlusTwo(3)."
        DEFVAL { 96 }
        ::= { pnniScopeMappingEntry 3 }

pnniScopeSiteMinusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy  (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value siteMinusOne(4)."
        DEFVAL { 80 }
        ::= { pnniScopeMappingEntry 4 }

pnniScopeIntraSite OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value intraSite(5)."
```

```
        DEFVAL { 80 }
        ::= { pnniScopeMappingEntry 5 }

pnniScopeSitePlusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value sitePlusOne(6)."
        DEFVAL { 72 }
        ::= { pnniScopeMappingEntry 6 }

pnniScopeOrganizationMinusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value organizationMinusOne(7)."
        DEFVAL { 72 }
        ::= { pnniScopeMappingEntry 7 }

pnniScopeIntraOrganization OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value intraOrganization(8)."
        DEFVAL { 64 }
        ::= { pnniScopeMappingEntry 8 }

pnniScopeOrganizationPlusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value organizationPlusOne(9)."
        DEFVAL { 64 }
        ::= { pnniScopeMappingEntry 9 }

pnniScopeCommunityMinusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value communityMinusOne(10)."
        DEFVAL { 64 }
        ::= { pnniScopeMappingEntry 10 }

pnniScopeIntraCommunity OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
```

```
             value intraCommunity(11)."
        DEFVAL { 48 }
        ::= { pnniScopeMappingEntry 11 }

pnniScopeCommunityPlusOne OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value communityPlusOne(12)."
        DEFVAL { 48 }
        ::= { pnniScopeMappingEntry 12 }

pnniScopeRegional OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value regional(13)."
        DEFVAL { 32 }
        ::= { pnniScopeMappingEntry 13 }

pnniScopeInterRegional OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value interRegional(14)."
        DEFVAL { 32 }
        ::= { pnniScopeMappingEntry 14 }

pnniScopeGlobal OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The highest level of PNNI hierarchy (i.e. smallest PNNI
             routing level) that lies within the organizational scope
             value global(15)."
        DEFVAL { 0 }
        ::= { pnniScopeMappingEntry 15 }


-- Deprecated summary advertising table

pnniSummaryTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniSummaryEntry
        MAX-ACCESS    not-accessible
        STATUS        deprecated
        DESCRIPTION
            "A list of the summary address prefixes that may be
             advertised by the specified logical PNNI entity."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        ::= { pnniMIBObjects 7 }
pnniSummaryEntry OBJECT-TYPE
        SYNTAX        PnniSummaryEntry
        MAX-ACCESS    not-accessible
        STATUS        deprecated
```

```
        DESCRIPTION
            "An entry in the table, containing summary address prefix
             information in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        INDEX         { pnniNodeIndex,
                        pnniSummaryAddress,
                        pnniSummaryPrefixLength }
        ::= { pnniSummaryTable 1 }

PnniSummaryEntry ::=
        SEQUENCE {
                pnniSummaryAddress              AtmAddrPrefix,
                pnniSummaryPrefixLength         PnniPrefixLength,
                pnniSummaryType                 INTEGER,
                pnniSummarySuppress             TruthValue,
                pnniSummaryState                INTEGER,
                pnniSummaryRowStatus            RowStatus
        }

pnniSummaryAddress OBJECT-TYPE
        SYNTAX        AtmAddrPrefix
        MAX-ACCESS    not-accessible
        STATUS        deprecated
        DESCRIPTION
            "The ATM End System Address prefix for the summary."
        ::= { pnniSummaryEntry 1 }

pnniSummaryPrefixLength OBJECT-TYPE
        SYNTAX        PnniPrefixLength
        MAX-ACCESS    not-accessible
        STATUS        deprecated
        DESCRIPTION
            "The prefix length for the summary."
        ::= { pnniSummaryEntry 2 }

pnniSummaryType OBJECT-TYPE
        SYNTAX        INTEGER { internal(1), exterior(2) }
        MAX-ACCESS    read-create
        STATUS        deprecated
        DESCRIPTION
            "The type (e.g. internal or exterior) of summary being
                      described."
        DEFVAL { internal }
        ::= { pnniSummaryEntry 3 }

pnniSummarySuppress OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        deprecated
        DESCRIPTION
            "Determines what is done with addresses that are being
             summarized by the instance. The default value (e.g. false)
             will indicate that the summary should propagate into the
             peer group. Network Management will be able to set the
             value of this attribute to `suppress' (e.g. true), which
             suppresses the summary and any reachable addresses it
             summarizes from being advertised into the peer group."
        DEFVAL { false }
        ::= { pnniSummaryEntry 4 }

pnniSummaryState OBJECT-TYPE
        SYNTAX        INTEGER {
                                advertising(1),
                                suppressing(2),
```

```
                                inactive(3)
                                }
        MAX-ACCESS    read-only
        STATUS        deprecated
        DESCRIPTION
            "Indicates whether the summary is currently being advertised
             by the node within the local switching system into its peer
             group."
        ::= { pnniSummaryEntry 5 }

pnniSummaryRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        deprecated
        DESCRIPTION
            "To create, delete, activate and de-activate a summary."
        ::= { pnniSummaryEntry 6 }

-- Summary address table

pnniSummaryAddressTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniSummaryAddressEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A list of the summary address prefixes that may be
             advertised by the specified logical PNNI entity."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        ::= { pnniMIBObjects 20 }

pnniSummaryAddressEntry OBJECT-TYPE
        SYNTAX        PnniSummaryAddressEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing summary address prefix
             information in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.9.2"
        INDEX         { pnniNodeIndex,
                                pnniSummaryAddressType,
                                pnniSummaryAddressAddress,
                                pnniSummaryAddressPrefixLength }
        ::= { pnniSummaryAddressTable 1 }

PnniSummaryAddressEntry ::=
        SEQUENCE {
        pnniSummaryAddressType                      INTEGER,
                pnniSummaryAddressAddress             AtmAddrPrefix,
                pnniSummaryAddressPrefixLength        PnniPrefixLength,
                pnniSummaryAddressSuppress            TruthValue,
                pnniSummaryAddressState               INTEGER,
                pnniSummaryAddressRowStatus           RowStatus
        }

pnniSummaryAddressType OBJECT-TYPE
        SYNTAX         INTEGER { internal(1), exterior(2) }
        MAX-ACCESS     not-accessible
        STATUS         current
        DESCRIPTION
            "The type (e.g. internal or exterior) of summary being
                        described."
        ::= { pnniSummaryAddressEntry 1 }
```

```
pnniSummaryAddressAddress OBJECT-TYPE
        SYNTAX        AtmAddrPrefix
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The ATM End System Address prefix for the summary."
        ::= { pnniSummaryAddressEntry 2 }

pnniSummaryAddressPrefixLength OBJECT-TYPE
        SYNTAX        PnniPrefixLength
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The prefix length for the summary."
        ::= { pnniSummaryAddressEntry 3 }

pnniSummaryAddressSuppress OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Determines what is done with addresses that are being
             summarized by the instance. The default value (e.g. false)
             will indicate that the summary should propagate into the
             peer group. Network Management will be able to set the
             value of this attribute to `suppress' (e.g. true), which
             suppresses the summary and any reachable addresses it
             summarizes from being advertised into the peer group."
        DEFVAL { false }
        ::= { pnniSummaryAddressEntry 4 }

pnniSummaryAddressState OBJECT-TYPE
        SYNTAX        INTEGER {
                                advertising(1),
                                suppressing(2),
                                inactive(3)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the summary is currently being advertised
             by the node within the local switching system into its peer
             group."
        ::= { pnniSummaryAddressEntry 5 }

pnniSummaryAddressRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "To create, delete, activate and de-activate a summary."
        ::= { pnniSummaryAddressEntry 6 }

-- Interface table

pnniIfTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniIfEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniIfTable contains the attributes necessary to
             configure a physical interface on a switching system which
             is capable of being used for PNNI routing.  Interfaces may
             represent physical connection points (i.e. copper/fiber
             connection points) or VPCs which have been configured for
```

```
            PNNI's use.  Each interface is attached to a specific
            lowest-level node within the switching system.

            An ifIndex is used as the instance ID to uniquely identify
            the interface on the local switching system. This index has
            the same value as the ifIndex object defined in RFC 1573
            for the same interface, since this table correlates with
            the ifTable in RFC 1573.

            One row in this table is created by the managed system for
            each row in the ifTable that has an ifType of atm(37) or
            atmLogical(80)."
        ::= { pnniMIBObjects 8 }

pnniIfEntry OBJECT-TYPE
        SYNTAX        PnniIfEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing PNNI specific interface
             information in this switching system."
        INDEX         { ifIndex }
        ::= { pnniIfTable 1 }

PnniIfEntry ::=
        SEQUENCE {
                pnniIfNodeIndex         PnniNodeIndex,
                pnniIfPortId            PnniPortId,
                pnniIfAggrToken         PnniAggrToken,
                pnniIfVPCapability      TruthValue,
                pnniIfAdmWeightCbr      Unsigned32,
                pnniIfAdmWeightRtVbr    Unsigned32,
                pnniIfAdmWeightNrtVbr   Unsigned32,
                pnniIfAdmWeightAbr      Unsigned32,
                pnniIfAdmWeightUbr      Unsigned32,
                pnniIfRccServiceCategory    ServiceCategory,
                pnniIfRccTrafficDescrIndex  AtmTrafficDescrParamIndex
                }

pnniIfNodeIndex OBJECT-TYPE
        SYNTAX        PnniNodeIndex (1..65535)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "Identifies the node within the switching system that the
             interface is directly attached to.  The value zero is not
             a valid value."
        DEFVAL { 1 }
        ::= { pnniIfEntry 1 }

pnniIfPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Port Identifier of the port as selected by the PNNI
             protocol entity for the given interface.  This value has
             meaning only within the context of the node to which the
             port is attached.  The distinguished value zero indicates
             that no PNNI Port Identifier has been assigned for this
             interface (for example, this value may be used when the
             interface is not running PNNI)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.4"
        ::= { pnniIfEntry 2 }
```

```
pnniIfAggrToken OBJECT-TYPE
        SYNTAX        PnniAggrToken
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The configured aggregation token for this interface.  The
             aggregation token controls what other links the link
             associated with this interface will be aggregated together
             with."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.3.5, 5.10.3.1"
        DEFVAL { 0 }
        ::= { pnniIfEntry 3 }

pnniIfVPCapability OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "Indicates whether the interface is capable of having VPCs
             established within it or not.

             This object may only have the value `true' for physical ATM
             interfaces, i.e. those with an ifType of atm(37)."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.14.9.1 Table 5-34"
        ::= { pnniIfEntry 4 }

pnniIfAdmWeightCbr OBJECT-TYPE
        SYNTAX        Unsigned32 (1..16777215)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The administrative weight of this interface for the
             constant bit rate service category."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 5040 }
        ::= { pnniIfEntry 5 }

pnniIfAdmWeightRtVbr OBJECT-TYPE
        SYNTAX        Unsigned32 (1..16777215)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The administrative weight of this interface for the
             real-time variable bit rate service category."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 5040 }
        ::= { pnniIfEntry 6 }

pnniIfAdmWeightNrtVbr OBJECT-TYPE
        SYNTAX        Unsigned32 (1..16777215)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The administrative weight of this interface for the
             non-real-time variable bit rate service category."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 5040 }
        ::= { pnniIfEntry 7 }

pnniIfAdmWeightAbr OBJECT-TYPE
```

```
        SYNTAX        Unsigned32 (1..16777215)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The administrative weight of this interface for the
             available bit rate service category."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 5040 }
        ::= { pnniIfEntry 8 }

pnniIfAdmWeightUbr OBJECT-TYPE
        SYNTAX        Unsigned32 (1..16777215)
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The administrative weight of this interface for the
             unspecified bit rate service category."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 5040 }
        ::= { pnniIfEntry 9 }

pnniIfRccServiceCategory OBJECT-TYPE
        SYNTAX        ServiceCategory
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The service category used for the PNNI routing control
             channel (VCI=18) on this interface."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.5.2, 5.5.3"
        ::= { pnniIfEntry 10 }

pnniIfRccTrafficDescrIndex OBJECT-TYPE
        SYNTAX        AtmTrafficDescrParamIndex
        MAX-ACCESS    read-write
        STATUS        current
        DESCRIPTION
            "The traffic descriptor index referring to the entry in the
             atmTrafficDescrParamTable defined in RFC 1695 that
             specifies the traffic allocation for the PNNI routing
             control channel (VCI=18) on this interface."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.5.2, 5.5.3, Annex G
             RCCMaximumBurstSize, RCCPeakCellRate,
             RCCSustainableCellRate"
        ::= { pnniIfEntry 11 }


-- link table

pnniLinkTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniLinkEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This table contains the attributes necessary to describe
             the operation of logical links attached to the local
             switching system and the relationship with the neighbor
             nodes on the other end of the links.  Links are attached to
             a specific node within the switching system.  A
             concatenation of the Node Index of the node within the
             local switching system and the port ID are used as the
             instance ID to uniquely identify the link.  Links may
```

```
            represent horizontal links between lowest level neighboring
            peers, outside links, uplinks, or horizontal links to/from
            LGNs.

            The entire pnniLink object is read-only, reflecting the
            fact that this information is discovered dynamically by the
            PNNI protocol rather than configured."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.6"
        ::= { pnniMIBObjects 9 }

pnniLinkEntry OBJECT-TYPE
        SYNTAX        PnniLinkEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a link
             attached to a PNNI logical node in this switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.6"
        INDEX         { pnniNodeIndex,
                        pnniLinkPortId }
        ::= { pnniLinkTable 1 }

PnniLinkEntry ::=
        SEQUENCE {
                pnniLinkPortId          PnniPortId,
                pnniLinkType            INTEGER,
                pnniLinkVersion         PnniVersion,
                pnniLinkHelloState      PnniHelloState,
                pnniLinkRemoteNodeId    PnniNodeId,
                pnniLinkRemotePortId    PnniPortId,
                pnniLinkDerivedAggrToken        PnniAggrToken,
                pnniLinkUpnodeId        PnniNodeId,
                pnniLinkUpnodeAtmAddress        PnniAtmAddr,
                pnniLinkCommonPeerGroupId       PnniPeerGroupId,
                pnniLinkIfIndex         InterfaceIndex,
                pnniLinkSvccRccIndex    PnniSvccRccIndex,
                pnniLinkRcvHellos       Counter32,
                pnniLinkXmtHellos       Counter32
                }

pnniLinkPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The Port Identifier of the link as selected by the local
             node.  This value has meaning only within the context of
             the node to which the port is attached."
        ::= { pnniLinkEntry 1 }

pnniLinkType OBJECT-TYPE
        SYNTAX        INTEGER {
                                unknown(1),
                                lowestLevelHorizontalLink(2),
                                horizontalLinkToFromLgn(3),
                                lowestLevelOutsideLink(4),
                                uplink(5),
                                outsideLinkAndUplink(6)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates the type of link being described."
```

```
        ::= { pnniLinkEntry 2 }

pnniLinkVersion OBJECT-TYPE
        SYNTAX        PnniVersion
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal and outside links between lowest-level nodes
             and for links of unknown type, this attribute indicates the
             version of PNNI routing protocol used to exchange
             information over this link.  If communication with the
             neighbor node has not yet been established, then the
             Version is set to `unknown'.  For uplinks (where the
             port ID is not also used for the underlying outside link)
             or links to/from LGNs, the Version is set to `unknown'."
        ::= { pnniLinkEntry 3 }

pnniLinkHelloState OBJECT-TYPE
        SYNTAX        PnniHelloState
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal and outside links between lowest-level nodes
             and for links of unknown type, this attribute indicates the
             state of the Hello protocol exchange over this link.  For
             links to/from LGNs, this attribute indicates the state of
             the corresponding LGN Horizontal Link Hello State Machine.
             For uplinks (where the port ID is not also used for the
             underlying outside link), this attribute is set to
             notApplicable."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.6.2.1.2"
        ::= { pnniLinkEntry 4 }

pnniLinkRemoteNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates the node identifier of the remote (neighboring)
             node on the other end of the link.  If the pnniLinkType is
             `outside link and uplink', this is the node identifier of
             the lowest-level neighbor node on the other end of the
             outside link.  If the remote node ID is unknown or if the
             pnniLinkType is `uplink', this attribute is set to all
             zeros."
        ::= { pnniLinkEntry 5 }

pnniLinkRemotePortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates the port identifier of the port at the remote end
             of the link as assigned by the remote node.  If the
             pnniLinkType is `outside link and uplink', this is the port
             identifier assigned by the lowest-level neighbor node to
             identify the outside link.  If the remote port ID is
             unknown or if the pnniLinkType is `uplink', this attribute
             is set to zero."
        ::= { pnniLinkEntry 6 }

pnniLinkDerivedAggrToken OBJECT-TYPE
        SYNTAX        PnniAggrToken
        MAX-ACCESS    read-only
```

```
        STATUS        current
        DESCRIPTION
            "Indicates the derived aggregation token value used on this
             link.  For horizontal links between lowest-level nodes and
             when the link type is not yet known, this attribute takes
             the value of zero."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.10.3.1"
        ::= { pnniLinkEntry 7 }

pnniLinkUpnodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For outside links and uplinks, this attribute contains the
             Node Identifier of the upnode (the neighbor node's identity
             at the level of the common peer group).  When the upnode
             has not yet been identified, this attribute is set to zero.
             For horizontal links or when the link type is not yet
             known, this attribute is set to zero."
        ::= { pnniLinkEntry 8 }

pnniLinkUpnodeAtmAddress OBJECT-TYPE
        SYNTAX        PnniAtmAddr
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For outside links and uplinks, this attribute contains the
             ATM End System Address used to establish connections to the
             upnode.  When the upnode has not yet been identified, this
             attribute is set to zero.  For horizontal links or when the
             link type is not yet known, this attribute is set to zero."
        ::= { pnniLinkEntry 9 }

pnniLinkCommonPeerGroupId OBJECT-TYPE
        SYNTAX        PnniPeerGroupId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For outside links and uplinks, this attribute contains the
             peer group identifier of the lowest level common Peer Group
             in the ancestry of the neighboring node and the node within
             the local switching system.  The value of this attribute
             takes on a value determined by the Hello exchange of
             hierarchical information that occurs between the two
             lowest-level border nodes.  When the common peer group has
             not yet been identified, this attribute is set to zero.
             For horizontal links or when the link type is not yet
             known, this attribute is set to all zeros."
        ::= { pnniLinkEntry 10 }

pnniLinkIfIndex OBJECT-TYPE
        SYNTAX        InterfaceIndex
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal and outside links between lowest-level nodes
             and for links of unknown type, this attribute identifies
             the interface to which the logical link corresponds.

             For all other cases, the value of this object is zero."
        ::= { pnniLinkEntry 11 }

pnniLinkSvccRccIndex OBJECT-TYPE
```

```
        SYNTAX        PnniSvccRccIndex
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal links to/from LGNs, this attribute
             identifies the SVCC-based RCC used to exchange information
             with the neighboring peer logical group node.  If the
             pnniLinkType is not `horizontal link to/from LGN', this
             attribute shall take the value of zero."
        ::= { pnniLinkEntry 12 }

pnniLinkRcvHellos OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal and outside links between lowest-level nodes
             and for links of unknown type, this attribute contains a
             count of the number of Hello Packets received over this
             link.  If the pnniLinkType is `horizontal link to/from LGN'
             or `uplink', this attribute is set to zero."
        ::= { pnniLinkEntry 13 }

pnniLinkXmtHellos OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal and outside links between lowest-level nodes
             and for links of unknown type, this attribute contains a
             count of the number of Hello Packets transmitted over this
             link.  If the pnniLinkType is `horizontal link to/from LGN'
             or `uplink', this attribute is set to zero."
        ::= { pnniLinkEntry 14 }


-- neighboring peer table

pnniNbrPeerTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNbrPeerEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniNbrPeer Object contains all the attributes
             necessary to describe the relationship a node in this
             switching system has with a neighboring node within the
             same peer group.  A concatenation of the Node Identifier of
             the node within the local switching system and the
             neighboring peer's Node Identifier is used to form the
             instance ID for this object.

             The entire pnniNbrPeer object is read-only, reflecting the
             fact that neighboring peers are discovered dynamically by
             the PNNI protocol rather than configured."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.7, 5.8"
        ::= { pnniMIBObjects 10 }

pnniNbrPeerEntry OBJECT-TYPE
        SYNTAX        PnniNbrPeerEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about this
             node's relationship with a neighboring peer node."
```

```
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.7, 5.8"
        INDEX         { pnniNodeIndex,
                        pnniNbrPeerRemoteNodeId }
        ::= { pnniNbrPeerTable 1 }

PnniNbrPeerEntry ::=
        SEQUENCE {
                pnniNbrPeerRemoteNodeId         PnniNodeId,
                pnniNbrPeerState                INTEGER,
                pnniNbrPeerSvccRccIndex         PnniSvccRccIndex,
                pnniNbrPeerPortCount            Gauge32,
                pnniNbrPeerRcvDbSums            Counter32,
                pnniNbrPeerXmtDbSums            Counter32,
                pnniNbrPeerRcvPtsps             Counter32,
                pnniNbrPeerXmtPtsps             Counter32,
                pnniNbrPeerRcvPtseReqs          Counter32,
                pnniNbrPeerXmtPtseReqs          Counter32,
                pnniNbrPeerRcvPtseAcks          Counter32,
                pnniNbrPeerXmtPtseAcks          Counter32
                }

pnniNbrPeerRemoteNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The Node Identifier of the neighboring peer node."
        ::= { pnniNbrPeerEntry 1 }

pnniNbrPeerState OBJECT-TYPE
        SYNTAX        INTEGER {
                                npdown(1),
                                negotiating(2),
                                exchanging(3),
                                loading(4),
                                full(5)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates the state of this node's Neighboring Peer State
             Machine associated with pnniNbrPeerRemoteNodeId."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.7.2"
        ::= { pnniNbrPeerEntry 2 }

pnniNbrPeerSvccRccIndex OBJECT-TYPE
        SYNTAX        PnniSvccRccIndex
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Identifies the SVCC-based RCC being used to communicate
             with the neighboring peer if one exists.  If both the local
             node and the neighboring peer node are lowest-level nodes,
             this attribute is set to zero."
        ::= { pnniNbrPeerEntry 3 }

pnniNbrPeerPortCount OBJECT-TYPE
        SYNTAX        Gauge32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "A count of the total number of ports that connect to the
             neighboring peer.  If the neighboring peer only
```

```
             communicates via an SVCC-based RCC, the value of this
             attribute is set to zero.  Otherwise it is set to the total
             number of ports to the neighboring peer in the Hello state
             2-WayInside."
         ::= { pnniNbrPeerEntry 4 }

pnniNbrPeerRcvDbSums OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of Database Summary Packets received
              from the neighboring peer."
         ::= { pnniNbrPeerEntry 5 }

pnniNbrPeerXmtDbSums OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of Database Summary Packets
              transmitted to the neighboring peer."
         ::= { pnniNbrPeerEntry 6 }

pnniNbrPeerRcvPtsps OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of PTSPs received from the
              neighboring peer."
         ::= { pnniNbrPeerEntry 7 }

pnniNbrPeerXmtPtsps OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of PTSPs (re)transmitted to the
              neighboring peer."
         ::= { pnniNbrPeerEntry 8 }

pnniNbrPeerRcvPtseReqs OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of PTSE Request packets received from
              the neighboring peer."
         ::= { pnniNbrPeerEntry 9 }

pnniNbrPeerXmtPtseReqs OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "A count of the number of PTSE Request packets transmitted
              to the neighboring peer."
         ::= { pnniNbrPeerEntry 10 }

pnniNbrPeerRcvPtseAcks OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
```

```
            "A count of the number of PTSE Ack packets received from the
             neighboring peer."
        ::= { pnniNbrPeerEntry 11 }

pnniNbrPeerXmtPtseAcks OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "A count of the number of PTSE Ack packets transmitted to
             the neighboring peer."
        ::= { pnniNbrPeerEntry 12 }


-- neighboring peer port table

pnniNbrPeerPortTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniNbrPeerPortEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table of all ports in Hello state 2-Way Inside to a given
             neighboring peer node.  A concatenation of the Node Index
             of the node within the local switching system, the
             neighbor's Node Identifier and the Interface Index of the
             port being described forms the instance ID for this object.
             This object is only used for lowest-level nodes."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.7.1 Port ID List"
        ::= { pnniMIBObjects 11 }

pnniNbrPeerPortEntry OBJECT-TYPE
        SYNTAX        PnniNbrPeerPortEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a port
             in the Hello state 2-Way Inside from a PNNI logical node in
             this switching system to a neighboring peer node."
        INDEX         { pnniNodeIndex,
                        pnniNbrPeerRemoteNodeId,
                        pnniNbrPeerPortId
                         }
        ::= { pnniNbrPeerPortTable 1 }

PnniNbrPeerPortEntry ::=
        SEQUENCE {
                pnniNbrPeerPortId               PnniPortId,
                pnniNbrPeerPortFloodStatus      TruthValue
               }

pnniNbrPeerPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The port ID of a port to the neighboring peer that is in
             the Hello state 2-Way Inside."
        ::= { pnniNbrPeerPortEntry 1 }

pnniNbrPeerPortFloodStatus OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
```

```
            "Indicates whether the port is being used for transmission
             of flooding and database synchronization information to the
             neighboring peer."
        ::= { pnniNbrPeerPortEntry 2 }


-- pnni SVCC-based routing control channel table

pnniSvccRccTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniSvccRccEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table containing the attributes necessary to analyze the
             operation of the PNNI protocol on SVCC-based Routing
             Control Channels. This entire object is read-only,
             reflecting the fact that SVCC-based RCCs are established
             dynamically during operation of the PNNI protocol rather
             than configured."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.5.6, 5.6.3.1"
        ::= { pnniMIBObjects 12 }

pnniSvccRccEntry OBJECT-TYPE
        SYNTAX        PnniSvccRccEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about an
             SVCC-based RCC from a PNNI logical node in this switching
             system."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.5.6, 5.6.3.1"
        INDEX         { pnniNodeIndex,
                        pnniSvccRccIndex }
        ::= { pnniSvccRccTable 1 }

PnniSvccRccEntry ::=
        SEQUENCE {
                pnniSvccRccIndex            PnniSvccRccIndex,
                pnniSvccRccVersion          PnniVersion,
                pnniSvccRccHelloState       PnniHelloState,
                pnniSvccRccRemoteNodeId     PnniNodeId,
                pnniSvccRccRemoteAtmAddress     PnniAtmAddr,
                pnniSvccRccRcvHellos        Counter32,
                pnniSvccRccXmtHellos        Counter32,
                pnniSvccRccIfIndex          InterfaceIndex,
                pnniSvccRccVpi              INTEGER,
                pnniSvccRccVci              INTEGER
                }

pnniSvccRccIndex OBJECT-TYPE
        SYNTAX        PnniSvccRccIndex
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An index into the node's tables of SVCC-based RCCs."
        ::= { pnniSvccRccEntry 1 }

pnniSvccRccVersion OBJECT-TYPE
        SYNTAX        PnniVersion
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The version of the PNNI routing protocol used to exchange
```

```
             information with the neighbor node."
        ::= { pnniSvccRccEntry 2 }

pnniSvccRccHelloState OBJECT-TYPE
        SYNTAX        PnniHelloState
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The state of the Hello protocol exchange over the
             SVCC-based RCC.

             Note: the Down state indicates that the SVCC
             establishment is in progress."
        ::= { pnniSvccRccEntry 3 }

pnniSvccRccRemoteNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The remote node at which the SVCC-based RCC terminates."
        ::= { pnniSvccRccEntry 4 }

pnniSvccRccRemoteAtmAddress OBJECT-TYPE
        SYNTAX        PnniAtmAddr
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The ATM End System Address to which SVCC establishment is
             attempted."
        ::= { pnniSvccRccEntry 5 }

pnniSvccRccRcvHellos OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "A count of the number of Hello Packets received over this
             SVCC-based RCC."
        ::= { pnniSvccRccEntry 6 }

pnniSvccRccXmtHellos OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "A count of the number of Hello Packets transmitted over
             this SVCC-based RCC."
        ::= { pnniSvccRccEntry 7 }

pnniSvccRccIfIndex OBJECT-TYPE
        SYNTAX        InterfaceIndex
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The interface from which the SVCC-based RCC leaves the
             switching system.  If the SVCC-based RCC has not yet been
             established, then this attribute takes the value of zero."
        ::= { pnniSvccRccEntry 8 }

pnniSvccRccVpi OBJECT-TYPE
        SYNTAX        INTEGER (0..4095)
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
```

```
            "The VPI used at the interface from which the SVCC-based RCC
             leaves the switching system.  If the SVCC-based RCC has not
             yet been established, then this attribute takes the value
             of zero "
        ::= { pnniSvccRccEntry 9 }

pnniSvccRccVci OBJECT-TYPE
        SYNTAX        INTEGER (0..65535)
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The VCI used at the interface from which the SVCC-based RCC
             leaves the switching system.  If the SVCC-based RCC has not
             yet been established, then this attribute takes the value
             of zero "
        ::= { pnniSvccRccEntry 10 }


-- PTSE table

pnniPtseTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniPtseEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniPtse object contains the attributes that describe
             the most recent instances of PTSEs in a node's topology
             database.  A concatenation of the Node Identifier of the
             local node that received the PTSE, the originating Node's
             Node Identifier and the PTSE Identifier are used to form
             the instance ID for an instance of this object."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.2"
        ::= { pnniMIBObjects 13 }

pnniPtseEntry OBJECT-TYPE
        SYNTAX        PnniPtseEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a PTSE
             in the topology database of a PNNI logical node in this
             switching system."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.2"
        INDEX         { pnniNodeIndex,
                        pnniPtseOriginatingNodeId,
                        pnniPtseId }
        ::= { pnniPtseTable 1 }

PnniPtseEntry ::=
        SEQUENCE {
                pnniPtseOriginatingNodeId       PnniNodeId,
                pnniPtseId                      Unsigned32,
                pnniPtseType                    INTEGER,
                pnniPtseSequenceNum             Unsigned32,
                pnniPtseChecksum                Unsigned32,
                pnniPtseLifeTime                Unsigned32,
                pnniPtseInfo                    OCTET STRING
                }

pnniPtseOriginatingNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
```

```
        DESCRIPTION
            "The Node Identifier of the node that originated the PTSE."
        ::= { pnniPtseEntry 1 }

pnniPtseId OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The value of the PTSE Identifier assigned to the PTSE by
             its originator."
        ::= { pnniPtseEntry 2 }

pnniPtseType OBJECT-TYPE
        SYNTAX        INTEGER  {
                                other(1),
                                nodalStateParameters(96),
                                nodalInformation(97),
                                internalReachableAddresses(224),
                                exteriorReachableAddresses(256),
                                horizontalLinks(288),
                                uplinks(289)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The type of information contained in the PTSE."
        ::= { pnniPtseEntry 3 }

pnniPtseSequenceNum OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The sequence number of the instance of the PTSE as it
             appears in the local topology database."
        ::= { pnniPtseEntry 4 }

pnniPtseChecksum OBJECT-TYPE
        SYNTAX        Unsigned32 (0..65535)
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The value of the PTSE checksum as it appears in the local
             topology database."
        ::= { pnniPtseEntry 5 }

pnniPtseLifeTime OBJECT-TYPE
        SYNTAX        Unsigned32 (0..65535)
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The value of the remaining lifetime for the given PTSE as
             it appears in the local topology database."
        ::= { pnniPtseEntry 6 }

pnniPtseInfo OBJECT-TYPE
        SYNTAX        OCTET STRING (SIZE(0..65535))
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "An unformatted hexadecimal dump of the PTSE contents in
             full.
```

```
             Note: If the size of the PTSE contents is larger than the
             maximum size of SNMP packets then this is truncated."
         ::= { pnniPtseEntry 7 }


-- pnni map table

pnniMapTable OBJECT-TYPE
         SYNTAX        SEQUENCE OF PnniMapEntry
         MAX-ACCESS    not-accessible
         STATUS        current
         DESCRIPTION
             "A table containing attributes necessary to find and analyze
              the operation of all links and nodes within the PNNI
              hierarchy, as seen from the perspective of a local node.
              An instance of a pnniMap Object describes a link in terms
              of a node at one end of the link.  Normally there will be
              two instances of the pnniMap object in the MIB for each
              horizontal link. The two instances provide information for
              Network management to map port identifiers from the nodes
              at both ends to the link between them.  A concatenation of
              the Local Node Index, Originating Node Identifier and
              Originating Port Identifier are used to form the instance
              ID for this object.

              This entire object is read-only, reflecting the fact that
              the map is discovered dynamically during operation of the
              PNNI protocol rather than configured."
         ::= { pnniMIBObjects 14 }

pnniMapEntry OBJECT-TYPE
         SYNTAX        PnniMapEntry
         MAX-ACCESS    not-accessible
         STATUS        current
         DESCRIPTION
             "An entry in the table, containing connectivity information
              about a node or link in the PNNI routing domain, as seen
              from the perspective of a PNNI logical node in this
              switching system."
         INDEX         { pnniNodeIndex,
                         pnniMapOriginatingNodeId,
                         pnniMapOriginatingPortId,
                         pnniMapIndex }
         ::= { pnniMapTable 1 }

PnniMapEntry ::=
         SEQUENCE {
                 pnniMapOriginatingNodeId        PnniNodeId,
                 pnniMapOriginatingPortId        PnniPortId,
                 pnniMapIndex                    INTEGER,
                 pnniMapType                     INTEGER,
                 pnniMapPeerGroupId              PnniPeerGroupId,
                 pnniMapAggrToken                PnniAggrToken,
                 pnniMapRemoteNodeId             PnniNodeId,
                 pnniMapRemotePortId             PnniPortId,
                 pnniMapVPCapability             TruthValue,
                 pnniMapPtseId                   Unsigned32,
                 pnniMapMetricsTag               PnniMetricsTag
                 }

pnniMapOriginatingNodeId OBJECT-TYPE
         SYNTAX        PnniNodeId
         MAX-ACCESS    not-accessible
         STATUS        current
         DESCRIPTION
```

```
            "The node identifier of the node whose connectivity within
             itself or to other nodes is being described."
        ::= { pnniMapEntry 1 }

pnniMapOriginatingPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The port identifier of the port as assigned by the
             originating node, to which the port is attached."
        ::= { pnniMapEntry 2 }

pnniMapIndex OBJECT-TYPE
        SYNTAX        INTEGER (0..65535)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An index into the set of link and nodal connectivity
             associated with the originating node and port.  This index
             is needed since there may be multiple entries for nodal
             connectivity from a specific node and port pair, in
             addition to any entry for a horizontal link or uplink."
        ::= { pnniMapEntry 3 }

pnniMapType OBJECT-TYPE
        SYNTAX        INTEGER {
                                horizontalLink(1),
                                uplink(2),
                                node(3)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The type of PNNI entity being described by this entry in
             the table."
        ::= { pnniMapEntry 4 }

pnniMapPeerGroupId OBJECT-TYPE
        SYNTAX        PnniPeerGroupId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Identifies the peer group of the originating node."
        ::= { pnniMapEntry 5 }

pnniMapAggrToken OBJECT-TYPE
        SYNTAX        PnniAggrToken
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal links to/from LGNs and for uplinks, this
             attribute contains the derived aggregation token value for
             this link.  For nodes and for horizontal links between
             lowest-level nodes, this attribute is set to zero."
        ::= { pnniMapEntry 6 }

pnniMapRemoteNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For horizontal links and uplinks, this attribute contains
             the node identifier of the node at the other end of the
             link from the originating node.  If unknown, the PNNI
```

```
             protocol entity sets this attribute's value to (all)
             zero(s).  For nodes, this attribute's value is set to (all)
             zero(s)."
         ::= { pnniMapEntry 7 }

pnniMapRemotePortId OBJECT-TYPE
         SYNTAX        PnniPortId
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "For horizontal links and uplinks, this attribute contains
             the port identifier of the port at the remote end of the
             link as assigned by the remote node.  If unknown, the PNNI
             protocol entity sets this attribute's value to zero.

             For nodes, this attribute contains the port identifier of
             the port at the other end of the spoke or bypass from the
             originating port.  When the originating port ID is zero, a
             value of zero indicates the default radius.  When the
             originating port ID is non-zero, a value of zero indicates
             the nodal nucleus."
         ::= { pnniMapEntry 8 }

pnniMapVPCapability OBJECT-TYPE
         SYNTAX        TruthValue
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "Indicates whether VPCs
             can be established across the PNNI entity being described
             by this entry in the pnniMapTable."
         ::= { pnniMapEntry 9 }

pnniMapPtseId OBJECT-TYPE
         SYNTAX        Unsigned32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "The value of the PTSE Identifier for the PTSE being
             originated by the originating node which contains the
             information group(s) describing the PNNI entity."
         ::= { pnniMapEntry 10 }

pnniMapMetricsTag OBJECT-TYPE
         SYNTAX        PnniMetricsTag
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
             "An arbitrary integer that is used to associate a set of
             traffic parameters that are always advertised together.
             Within this set, the parameters are distinguished by the
             service categories and direction to which a set of
             parameters apply.  This value is used as an index into
             the pnniMetricsTable.  The distinguished value zero
             indicates that no metrics are associated with the link or
             nodal connectivity."
         ::= { pnniMapEntry 11 }


-- nodal map table

pnniMapNodeTable OBJECT-TYPE
         SYNTAX        SEQUENCE OF PnniMapNodeEntry
         MAX-ACCESS    not-accessible
         STATUS        current
```

```
        DESCRIPTION
            "A list of nodes as seen from the perspective of a local
             node.  The pnniMapNodeTable contains all information
             learned by the local node from nodal information PTSEs.
             This entire object is read-only, reflecting the fact that
             the map is discovered dynamically during operation of the
             PNNI protocol rather than configured."
        ::= { pnniMIBObjects 15 }

pnniMapNodeEntry OBJECT-TYPE
        SYNTAX        PnniMapNodeEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a node
             in the PNNI routing domain, as seen from the perspective of
             a logical node in this switching system."
        INDEX         { pnniNodeIndex,
                        pnniMapNodeId }
        ::= { pnniMapNodeTable 1 }

PnniMapNodeEntry ::=
        SEQUENCE {
                pnniMapNodeId                   PnniNodeId,
                pnniMapNodePeerGroupId          PnniPeerGroupId,
                pnniMapNodeAtmAddress           PnniAtmAddr,
                pnniMapNodeRestrictedTransit    TruthValue,
                pnniMapNodeComplexRep           TruthValue,
                pnniMapNodeRestrictedBranching  TruthValue,
                pnniMapNodeDatabaseOverload     TruthValue,
                pnniMapNodeIAmLeader            TruthValue,
                pnniMapNodeLeadershipPriority   INTEGER,
                pnniMapNodePreferredPgl         PnniNodeId,
                pnniMapNodeParentNodeId         PnniNodeId,
                pnniMapNodeParentAtmAddress     PnniAtmAddr,
                pnniMapNodeParentPeerGroupId    PnniPeerGroupId,
                pnniMapNodeParentPglNodeId      PnniNodeId
                }

pnniMapNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "Identifies the node whose nodal information is being
             described."
        ::= { pnniMapNodeEntry 1 }

pnniMapNodePeerGroupId OBJECT-TYPE
        SYNTAX        PnniPeerGroupId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Identifies the peer group of the originating node."
        ::= { pnniMapNodeEntry 2 }

pnniMapNodeAtmAddress OBJECT-TYPE
        SYNTAX        PnniAtmAddr
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The ATM End System Address of the originating node."
        ::= { pnniMapNodeEntry 3 }

pnniMapNodeRestrictedTransit OBJECT-TYPE
```

```
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the originating node is restricted to
             only allow support of SVCs originating or terminating at
             this node.  A value of `true' indicates that the transit
             capabilities are restricted, i.e., transit connections are
             not allowed, whereas a value of `false' indicates that
             transit connections are allowed.  This attribute reflects
             the setting of the restricted transit bit received in the
             nodal information PTSE of the originating node."
        ::= { pnniMapNodeEntry 4 }

pnniMapNodeComplexRep OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the originating node uses the complex
             node representation.  If the value is `true', the spokes
             and bypasses that make up the complex node representation
             should be found in the pnniMapTable.  This attribute
             reflects the setting of the nodal representation bit
             received in the nodal information PTSE of the originating
             node."
        ::= { pnniMapNodeEntry 5 }

pnniMapNodeRestrictedBranching  OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Indicates whether the originating node is able to support
             additional branches.  If the value is 'false', then it can
             support additional branches.  This attribute reflects the
             setting of the restricted branching bit received in the
             nodal information PTSE of the originating node."
        ::= { pnniMapNodeEntry 6 }

pnniMapNodeDatabaseOverload OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the originating node is currently
             operating in topology database overload state.  This
             attribute has the same value as the Non-transit for PGL
             Election bit in the nodal information group originated by
             this node."
        ::= { pnniMapNodeEntry 7 }

pnniMapNodeIAmLeader OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the originating node claims to be peer
             group leader of its peer group.  This attribute reflects
             the setting of the 'I am Leader' bit received in the nodal
             information PTSE of the originating node."
        ::= { pnniMapNodeEntry 8 }

pnniMapNodeLeadershipPriority OBJECT-TYPE
        SYNTAX        INTEGER (0..255)
```

```
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Leadership priority value advertised by the originating
             node."
        ::= { pnniMapNodeEntry 9 }

pnniMapNodePreferredPgl OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Identifies the node which the originating node believes
             should be or is peer group leader of its peer group.  If
             the originating node has not chosen a Preferred PGL, this
             attribute's value is set to (all) zero(s)."
        ::= { pnniMapNodeEntry 10 }

pnniMapNodeParentNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "When the originating node is a peer group leader, indicates
             the node ID of the parent LGN.  If the originating node is
             not peer group leader of its peer group, this attribute's
             value is set to (all) zero(s)."
        ::= { pnniMapNodeEntry 11 }

pnniMapNodeParentAtmAddress OBJECT-TYPE
        SYNTAX        PnniAtmAddr
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "When the originating node is a peer group leader, indicates
             the ATM address of the parent LGN.  If the originating node
             is not peer group leader of its peer group, this
             attribute's value is set to (all) zero(s)."
        ::= { pnniMapNodeEntry 12 }

pnniMapNodeParentPeerGroupId OBJECT-TYPE
        SYNTAX        PnniPeerGroupId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "When the originating node is a peer group leader, indicates
             the node's parent peer group ID.  If the originating node
             is not peer group leader of its peer group, this
             attribute's value is set to (all) zero(s)."
        ::= { pnniMapNodeEntry 13 }

pnniMapNodeParentPglNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "When the originating node is a peer group leader,
             identifies the node elected as peer group leader of the
             parent peer group.  If the originating node is not peer
             group leader of its peer group, this attribute's value is
             set to (all) zero(s)."
        ::= { pnniMapNodeEntry 14 }


-- address map table
```

```
pnniMapAddrTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniMapAddrEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The pnniMapAddr MIB Object contains a list of all reachable
             addresses from each node visible to the local node.  The
             Local Node Index, Advertising Node ID, Advertised Port ID,
             Reachable Address, and Address prefix length are combined
             to form an instance ID for this object.  The entire object
             is read-only, reflecting the fact that reachable addresses
             are discovered during dynamic operation of the PNNI
             protocol rather than configured."
        ::= { pnniMIBObjects 16 }

pnniMapAddrEntry OBJECT-TYPE
        SYNTAX        PnniMapAddrEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about an
             address prefix reachable from a node in the PNNI routing
             domain, as seen from the perspective of a PNNI logical node
             in this switching system."
        INDEX         { pnniNodeIndex,
                        pnniMapAddrAdvertisingNodeId,
                        pnniMapAddrAdvertisedPortId,
                        pnniMapAddrIndex }
        ::= { pnniMapAddrTable 1 }

PnniMapAddrEntry ::=
        SEQUENCE {
                pnniMapAddrAdvertisingNodeId    PnniNodeId,
                pnniMapAddrAdvertisedPortId     PnniPortId,
                pnniMapAddrIndex                INTEGER,
                pnniMapAddrAddress              AtmAddrPrefix,
                pnniMapAddrPrefixLength         PnniPrefixLength
                }

pnniMapAddrAdvertisingNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The node ID of a node advertising reachability to the
             address prefix."
        ::= { pnniMapAddrEntry 1 }

pnniMapAddrAdvertisedPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The port identifier used from the advertising node to reach
             the given address prefix."
        ::= { pnniMapAddrEntry 2 }

pnniMapAddrIndex OBJECT-TYPE
        SYNTAX        INTEGER (1..2147483647)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An arbitrary index that is used to enumerate all of the
             addresses advertised by the specified node."
        ::= { pnniMapAddrEntry 3 }
```

```
pnniMapAddrAddress OBJECT-TYPE
        SYNTAX        AtmAddrPrefix
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The value of the ATM End System Address prefix."
        ::= { pnniMapAddrEntry 4 }

pnniMapAddrPrefixLength OBJECT-TYPE
        SYNTAX        PnniPrefixLength
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The Prefix length to be applied to the ATM End System
             Address prefix."
        ::= { pnniMapAddrEntry 5 }


-- TNS map table

pnniMapTnsTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniMapTnsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A list of all reachable transit networks from each node
             visible to the local node.  The Local Node Index,
             Advertising Node ID, Advertised Port ID, Transit Network
             Type, Transit Network Plan, and Transit Network ID are
             combined to form an instance ID for this object. The entire
             object is read-only, reflecting the fact that reachable
             transit networks are discovered during dynamic operation of
             the PNNI protocol rather than configured."
        ::= { pnniMIBObjects 17 }

pnniMapTnsEntry OBJECT-TYPE
        SYNTAX        PnniMapTnsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a
             transit network reachable from a node in the PNNI routing
             domain, as seen from the perspective of a PNNI logical node
             in this switching system."
        INDEX         { pnniNodeIndex,
                        pnniMapTnsAdvertisingNodeId,
                        pnniMapTnsAdvertisedPortId,
                        pnniMapTnsType,
                        pnniMapTnsPlan,
                        pnniMapTnsId }
        ::= { pnniMapTnsTable 1 }

PnniMapTnsEntry ::=
        SEQUENCE {
                pnniMapTnsAdvertisingNodeId     PnniNodeId,
                pnniMapTnsAdvertisedPortId      PnniPortId,
                pnniMapTnsType                  TnsType,
                pnniMapTnsPlan                  TnsPlan,
                pnniMapTnsId                    DisplayString
                }

pnniMapTnsAdvertisingNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
```

```
        DESCRIPTION
            "The node ID of a node advertising reachability to the
             transit network."
        ::= { pnniMapTnsEntry 1 }

pnniMapTnsAdvertisedPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The port identifier used from the advertising node to reach
             the given transit network."
        ::= { pnniMapTnsEntry 2 }

pnniMapTnsType OBJECT-TYPE
        SYNTAX        TnsType
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The type of network identification used for this transit
             network."
        ::= { pnniMapTnsEntry 3 }

pnniMapTnsPlan OBJECT-TYPE
        SYNTAX        TnsPlan
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The network identification plan according to which network
             identification has been assigned."
        ::= { pnniMapTnsEntry 4 }

pnniMapTnsId OBJECT-TYPE
        SYNTAX        DisplayString
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The value of the transit network identifier."
        ::= { pnniMapTnsEntry 5 }



-- pnni metrics table

pnniMetricsTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniMetricsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This entity's table of PNNI parameters either associated
             with a PNNI entity or for the connectivity between a PNNI
             node and a reachable address or transit network."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3"
        ::= { pnniMIBObjects 18 }

pnniMetricsEntry OBJECT-TYPE
        SYNTAX        PnniMetricsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A set of parameters that applies to the connectivity from a
             certain node and port to another node or port or to one or
             more reachable address prefixes and/or transit networks,
             for one (or more) particular service category(s).  Note
```

```
            that there can be multiple sets of parameters with the same
            tag, in which case all sets apply to the specified
            connectivity."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3"
        INDEX         { pnniNodeIndex,
                        pnniMetricsTag,
                        pnniMetricsDirection,
                        pnniMetricsIndex }
        ::= { pnniMetricsTable 1 }

PnniMetricsEntry ::=
        SEQUENCE {
                pnniMetricsTag          PnniMetricsTag,
                pnniMetricsDirection    INTEGER,
                pnniMetricsIndex        Integer32,
                pnniMetricsClasses      INTEGER,
                pnniMetricsGcacClp      ClpType,
                pnniMetricsAdminWeight  Unsigned32,
                pnniMetrics1            Unsigned32,
                pnniMetrics2            Unsigned32,
                pnniMetrics3            Unsigned32,
                pnniMetrics4            Unsigned32,
                pnniMetrics5            Unsigned32,
                pnniMetrics6            Unsigned32,
                pnniMetrics7            Unsigned32,
                pnniMetrics8            Unsigned32,
                pnniMetricsRowStatus    RowStatus
                }


pnniMetricsTag OBJECT-TYPE
        SYNTAX        PnniMetricsTag (1..2147483647)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An arbitrary integer that is used to associate a set of
             traffic parameters that are always advertised together.
             Within this set, the parameters are distinguished by the
             service categories and direction to which a set of
             parameters apply."
        ::= { pnniMetricsEntry 1 }


pnniMetricsDirection OBJECT-TYPE
        SYNTAX        INTEGER { incoming(1), outgoing(2) }
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The direction, with respect to the advertising node, in
             which the parameters in this entry apply."
        ::= { pnniMetricsEntry 2 }


pnniMetricsIndex OBJECT-TYPE
        SYNTAX        Integer32 (1..2147483647)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An index into the set of parameters associated with the
             given tag and direction."
        ::= { pnniMetricsEntry 3 }


pnniMetricsClasses OBJECT-TYPE
```

```
        SYNTAX        INTEGER(0..31)
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The service categories to which this set of parameters
             applies.  This is an integer used as a bit mask with each
             bit that is set representing a single service category for
             which the resources indicated are available.  Bit 5
             represents CBR, bit 4 represents real-time VBR, bit 3
             represents non-real-time VBR, bit 2 represents ABR, and
             bit 1 (LSB) represents UBR."
        REFERENCE
            "ATM Forum Traffic Management 4.0 Section 2,
             ATM Forum PNNI 1.0 Section 5.8.1.1.3.1"
        ::= { pnniMetricsEntry 4 }

pnniMetricsGcacClp OBJECT-TYPE
        SYNTAX        ClpType
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Indicates whether the advertised GCAC parameters apply for
             CLP=0 traffic or for CLP=0+1 traffic."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.8.1.1.3.1, 5.13.4.1"
        ::= { pnniMetricsEntry 5 }


pnniMetricsAdminWeight OBJECT-TYPE
        SYNTAX        Unsigned32   (1..16777215)
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The administrative weight from the advertising node to the
             remote end of the PNNI entity or to the reachable address
             or transit network, for the specified service categories."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL     { 5040 }
        ::= { pnniMetricsEntry 6 }


pnniMetrics1 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the
             maximum cell rate in cells per second for the specified
             service categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.7"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 7 }


pnniMetrics2 OBJECT-TYPE
```

```
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the
             available cell rate in cells per second for the specified
             service categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.8"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 8 }


pnniMetrics3 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the
             maximum cell transfer delay in microseconds for the
             specified service categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.3"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 9 }


pnniMetrics4 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the cell
             delay variation in microseconds for the specified service
             categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.2"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 10 }
```

```
pnniMetrics5 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For PNNI, this is the cell loss ratio for CLP=0 traffic for
             the specified service categories.  The cell loss ratio
             value is computed as 10**(-n) where 'n' is the value
             returned in this variable.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.5"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 11 }

pnniMetrics6 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For PNNI, this is the cell loss ratio for CLP=0+1 traffic
             for the specified service categories.  The cell loss ratio
             value is computed as 10**(-n) where 'n' is the value
             returned in this variable.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.6"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 12 }


pnniMetrics7 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the cell
             rate margin in cells per second for the specified service
             categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.9"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 13 }
```

```
pnniMetrics8 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter from the advertising node to
             the remote end of the PNNI entity or to the reachable
             address or transit network, for the specified service
             categories.

             For information learned from PNNI nodes, this is the
             variance factor in units of 2**(-8) for the specified
             service categories.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.10"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniMetricsEntry 14 }


pnniMetricsRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "To create, delete, activate and de-activate a set of
             metrics."
        ::= { pnniMetricsEntry 15 }


--
--  PNNI Routing Tables
--

pnniRoutingGroup OBJECT IDENTIFIER ::= { pnniMIBObjects 19 }
pnniRouteBaseGroup OBJECT IDENTIFIER ::= { pnniRoutingGroup 1 }

pnniRouteNodeNumber OBJECT-TYPE
        SYNTAX        Gauge32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of current precalculated PNNI routes to PNNI
             nodes that are not invalid."
        ::= { pnniRouteBaseGroup 1 }


pnniRouteAddrNumber OBJECT-TYPE
        SYNTAX        Gauge32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of current PNNI routes from nodes in the PNNI
             routing domain to addresses and transit networks that are
             not invalid."
        ::= { pnniRouteBaseGroup 2 }


-- Table of routes to other nodes

pnniRouteNodeTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniRouteNodeEntry
```

```
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "This entity's PNNI Routing table (of routes to other
             nodes)."
        ::= { pnniRoutingGroup 2 }

pnniRouteNodeEntry OBJECT-TYPE
        SYNTAX        PnniRouteNodeEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A particular route to a particular destination node, under
             a particular policy."
        INDEX         { pnniNodeIndex,
                        pnniRouteNodeClass,
                        pnniRouteNodeDestNodeId,
                        pnniRouteNodeDTL }
        ::= { pnniRouteNodeTable 1 }

PnniRouteNodeEntry ::=
        SEQUENCE {
                pnniRouteNodeClass         ServiceCategory,
                pnniRouteNodeDestNodeId    PnniNodeId,
                pnniRouteNodeDTL           Integer32,
                pnniRouteNodeDestPortId    PnniPortId,
                pnniRouteNodeProto         INTEGER,
                pnniRouteNodeTimeStamp     TimeStamp,
                pnniRouteNodeInfo          OBJECT IDENTIFIER,
                pnniRouteNodeGcacClp       ClpType,
                pnniRouteNodeFwdMetricAW   Unsigned32,
                pnniRouteNodeFwdMetric1    Unsigned32,
                pnniRouteNodeFwdMetric2    Unsigned32,
                pnniRouteNodeFwdMetric3    Unsigned32,
                pnniRouteNodeFwdMetric4    Unsigned32,
                pnniRouteNodeFwdMetric5    Unsigned32,
                pnniRouteNodeFwdMetric6    Unsigned32,
                pnniRouteNodeFwdMetric7    Unsigned32,
                pnniRouteNodeFwdMetric8    Unsigned32,
                pnniRouteNodeBwdMetricAW   Unsigned32,
                pnniRouteNodeBwdMetric1    Unsigned32,
                pnniRouteNodeBwdMetric2    Unsigned32,
                pnniRouteNodeBwdMetric3    Unsigned32,
                pnniRouteNodeBwdMetric4    Unsigned32,
                pnniRouteNodeBwdMetric5    Unsigned32,
                pnniRouteNodeBwdMetric6    Unsigned32,
                pnniRouteNodeBwdMetric7    Unsigned32,
                pnniRouteNodeBwdMetric8    Unsigned32,
                pnniRouteNodeVPCapability  TruthValue,
                pnniRouteNodeStatus        RowStatus
                }

pnniRouteNodeClass OBJECT-TYPE
        SYNTAX        ServiceCategory
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "Indicates the service category with which this forwarding
             table entry is associated."
        ::= { pnniRouteNodeEntry 1 }

pnniRouteNodeDestNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    not-accessible
        STATUS        current
```

```
        DESCRIPTION
            "The node ID of the destination node to which this route
             proceeds, and at which the DTL stack for this route
             terminates."
        ::= { pnniRouteNodeEntry 2 }

pnniRouteNodeDTL OBJECT-TYPE
        SYNTAX        Integer32 (1..2147483647)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The index into the owning PNNI node's DTL table of the DTL
             stack that goes with this route."
        ::= { pnniRouteNodeEntry 3 }

pnniRouteNodeDestPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The port ID of the destination node at which the route
             terminates.  A port ID of zero indicates the node nucleus.
             When the destination node is represented by the simple node
             representation, this value should be set to zero."
        DEFVAL { 0 }
        ::= { pnniRouteNodeEntry 4 }


pnniRouteNodeProto OBJECT-TYPE
        SYNTAX        INTEGER {
                                other(1), -- not specified
                                local(2), -- e.g. ilmi
                                mgmt(3), -- configured by management,
                                       -- for example by SNMP or console
                                        -- the following are all dynamic
                                        -- routing protocols
                                pnni(4) -- ATM Forum PNNI
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The routing mechanism via which this route was learned."
        ::= { pnniRouteNodeEntry 5 }

pnniRouteNodeTimeStamp OBJECT-TYPE
        SYNTAX        TimeStamp
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The time at which this  route  was last  updated  or
             otherwise  determined  to be correct.  Note that no
             semantics of  `too  old' can  be implied except through
             knowledge of the routing  protocol  by  which  the route
             was learned."
        ::= { pnniRouteNodeEntry 6 }

pnniRouteNodeInfo OBJECT-TYPE
        SYNTAX        OBJECT IDENTIFIER
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "A reference to MIB definitions specific to the particular
             routing protocol which is responsible for this route, as
             determined by the value specified in the route's
             pnniRouteNodeProto value.  If this information is not
```

```
             present, its value should be set to the OBJECT IDENTIFIER
             zeroDotZero."
         DEFVAL { zeroDotZero }
         ::= { pnniRouteNodeEntry 7 }

pnniRouteNodeGcacClp OBJECT-TYPE
         SYNTAX        ClpType
         MAX-ACCESS    read-create
         STATUS        current
         DESCRIPTION
             "For PNNI, indicates whether any advertised GCAC parameters
             apply for CLP=0 traffic or for CLP=0+1 traffic."
         ::= { pnniRouteNodeEntry 8 }

pnniRouteNodeFwdMetricAW OBJECT-TYPE
         SYNTAX        Unsigned32
         MAX-ACCESS    read-create
         STATUS        current
         DESCRIPTION
             "The cumulative administrative weight calculated for the
             forward direction of this route.  If this metric is not
             used, its value should be set to 0xFFFFFFFF."
         REFERENCE
             "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
         DEFVAL { 'FFFFFFFF'h }
         ::= { pnniRouteNodeEntry 9 }

pnniRouteNodeFwdMetric1 OBJECT-TYPE
         SYNTAX        Unsigned32
         MAX-ACCESS    read-create
         STATUS        current
         DESCRIPTION
             "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             maximum possible cell rate (in cells per second) for the
             forward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
         REFERENCE
             "ATM Forum PNNI 1.0 Section 5.8.1.1.3.7"
         DEFVAL { 'FFFFFFFF'h }
         ::= { pnniRouteNodeEntry 10 }

pnniRouteNodeFwdMetric2 OBJECT-TYPE
         SYNTAX        Unsigned32
         MAX-ACCESS    read-create
         STATUS        current
         DESCRIPTION
             "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             Available cell rate (in cells per second) for the forward
             direction of the route.  Further information on available
             bandwidth may be obtainable by reference to the nodal
             advertisements of the nodes in the path.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
         REFERENCE
             "ATM Forum PNNI 1.0 Section 5.8.1.1.3.8"
         DEFVAL { 'FFFFFFFF'h }
```

```
        ::= { pnniRouteNodeEntry 11 }

pnniRouteNodeFwdMetric3 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             cumulative Maximum Cell Transfer Delay (in microseconds)
             for the forward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.3"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 12 }

pnniRouteNodeFwdMetric4 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Delay Variation (in microseconds) for the
             forward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.2"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 13 }

pnniRouteNodeFwdMetric5 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Loss Ratio for CLP=0 traffic for the
             forward direction of the route. The cell loss ratio value
             is computed as 10**(-n) where 'n' is the value returned in
             this variable.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.5"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 14 }

pnniRouteNodeFwdMetric6 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
```

```
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Loss Ratio for CLP=0+1 traffic for the
             forward direction of the route. The cell loss ratio value
             is computed as 10**(-n) where 'n' is the value returned in
             this variable.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.6"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 15 }


pnniRouteNodeFwdMetric7 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the Cell
             Rate Margin (in cells per second) for the forward direction
             of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.9"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 16 }

pnniRouteNodeFwdMetric8 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the forward direction of
             this route.

             For information learned from PNNI nodes, this is the
             Variance Factor (in units of 2**(-8)) for the forward
             direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.10"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 17 }

pnniRouteNodeBwdMetricAW OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The administrative weight calculated for the backward
             direction of this route.  If this metric is not used, its
             value should be set to 0xFFFFFFFF."
        REFERENCE
```

```
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.4"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 18 }

pnniRouteNodeBwdMetric1 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             maximum possible cell rate (in cells per second) for the
             backward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.7"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 19 }

pnniRouteNodeBwdMetric2 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             Available cell rate (in cells per second) for the backward
             direction of the route.  Further information on available
             bandwidth may be obtainable by reference to the nodal
             advertisements of the nodes in the path.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.8"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 20 }

pnniRouteNodeBwdMetric3 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             cumulative Maximum Cell Transfer Delay (in microseconds)
             for the backward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.3"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 21 }

pnniRouteNodeBwdMetric4 OBJECT-TYPE
        SYNTAX        Unsigned32
```

```
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Delay Variation (in microseconds) for the
             backward direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.2"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 22 }

pnniRouteNodeBwdMetric5 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Loss Ratio for CLP=0 traffic for the
             backward direction of the route. The cell loss ratio value
             is computed as 10**(-n) where 'n' is the value returned in
             this variable.

             If  this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.5"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 23 }

pnniRouteNodeBwdMetric6 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             cumulative Cell Loss Ratio for CLP=0+1 traffic for the
             backward direction of the route. The cell loss ratio value
             is computed as 10**(-n) where 'n' is the value returned in
             this variable.

             If  this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.6"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 24 }


pnniRouteNodeBwdMetric7 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
```

```
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the Cell
             Rate Margin (in cells per second) for the backward
             direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.9"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 25 }

pnniRouteNodeBwdMetric8 OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "An alternate routing parameter for the backward direction
             of this route.

             For information learned from PNNI nodes, this is the
             Variance Factor (in units of 2**(-8)) for the backward
             direction of the route.

             If this parameter is not used, its value should be set to
             0xFFFFFFFF."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.1.3.10"
        DEFVAL { 'FFFFFFFF'h }
        ::= { pnniRouteNodeEntry 26 }

pnniRouteNodeVPCapability OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "This attribute indicates whether a VPC setup on this route
             is possible."
        ::= { pnniRouteNodeEntry 27 }

pnniRouteNodeStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The row status variable, used according to row installation
             and removal conventions."
        ::= { pnniRouteNodeEntry 28 }


-- Table of DTL stacks for routes to other nodes

pnniDTLTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniDTLEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The set of all DTL stacks used for the pre-computed routes
             maintained by this managed entity."
        ::= { pnniRoutingGroup 3 }

pnniDTLEntry OBJECT-TYPE
        SYNTAX        PnniDTLEntry
```

```
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A segment of a DTL stack.  The complete DTL stack is formed
             by traversing the rows of the table for which the
             pnniDTLIndex is the same.  Level transitions are indicated
             using the pnniDLTLinkType column."
        INDEX {
                pnniNodeIndex,
                pnniDTLIndex,
                pnniDTLEntryIndex
                }
        ::= { pnniDTLTable 1 }

PnniDTLEntry ::=
        SEQUENCE {
                pnniDTLIndex      Integer32,
                pnniDTLEntryIndex Integer32,
                pnniDTLNodeId     PnniNodeId,
                pnniDTLPortId     PnniPortId,
                pnniDTLLinkType   INTEGER,
                pnniDTLStatus     RowStatus
                }

pnniDTLIndex OBJECT-TYPE
        SYNTAX        Integer32 (1..2147483647)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The index in the node's DTL table of this DTL stack."
        ::= { pnniDTLEntry 1 }

pnniDTLEntryIndex OBJECT-TYPE
        SYNTAX        Integer32 (1..200)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The index in the current DTL stack of this entry."
        ::= { pnniDTLEntry 2 }

pnniDTLNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The node which is this hop in the DTL stack."
        ::= { pnniDTLEntry 3 }

pnniDTLPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The port from the pnniDTLNodeId to use as the exit.  If the
             DTL stack does not care, this is coded as zero."
        ::= { pnniDTLEntry 4 }

pnniDTLLinkType OBJECT-TYPE
        SYNTAX        INTEGER {
                                invalid    (1), -- An invalid link
                                horizontal (2), -- A normal link within
                                                -- the containing peer group
                                uplink     (3), -- A link going up a
                                                -- level
                                last       (4) -- The last entry in the
```

```
                                                -- DTL stack
                                }
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The type of link out from this node (pnniDTLNodeId).  This
             is well defined even if the specific port is not
             specified."
        ::= { pnniDTLEntry 5 }

pnniDTLStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The row status variable, used according to row installation
             and removal conventions."
        ::= { pnniDTLEntry 6 }


-- Table of routes from nodes to reachable addresses

pnniRouteAddrTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniRouteAddrEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table containing all the attributes necessary to
             determine what the PNNI entity believes is reachable in
             terms of ATM End System Addresses and to determine which
             nodes are advertising this reachability.  This table is
             also used to configure static routes to reachable address
             prefixes.  The local node index that received the
             reachability information, reachable address, address prefix
             length, and an index that distinguishes between multiple
             listings of connectivity to a given address prefix from a
             given local node are combined to form an instance ID for
             this object."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3"
        ::= { pnniRoutingGroup 4 }

pnniRouteAddrEntry OBJECT-TYPE
        SYNTAX        PnniRouteAddrEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An entry in the table, containing information about a
             reachable address prefix."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3"
        INDEX         { pnniNodeIndex,
                        pnniRouteAddrAddress,
                        pnniRouteAddrPrefixLength,
                        pnniRouteAddrIndex }
        ::= { pnniRouteAddrTable 1 }
PnniRouteAddrEntry ::=
        SEQUENCE {
                pnniRouteAddrAddress            AtmAddrPrefix,
                pnniRouteAddrPrefixLength       PnniPrefixLength,
                pnniRouteAddrIndex              Integer32,
                pnniRouteAddrIfIndex            InterfaceIndex,
                pnniRouteAddrAdvertisingNodeId  PnniNodeId,
                pnniRouteAddrAdvertisedPortId   PnniPortId,
                pnniRouteAddrType               INTEGER,
```

```
                pnniRouteAddrProto              INTEGER,
                pnniRouteAddrPnniScope          PnniLevel,
                pnniRouteAddrVPCapability       TruthValue,
                pnniRouteAddrMetricsTag         PnniMetricsTag,
                pnniRouteAddrPtseId             Unsigned32,
                pnniRouteAddrOriginateAdvertisement     TruthValue,
                pnniRouteAddrInfo               OBJECT IDENTIFIER,
                pnniRouteAddrOperStatus         INTEGER,
                pnniRouteAddrTimeStamp          TimeStamp,
                pnniRouteAddrRowStatus          RowStatus
                }
pnniRouteAddrAddress OBJECT-TYPE
        SYNTAX        AtmAddrPrefix
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The value of the ATM End System Address prefix."
        ::= { pnniRouteAddrEntry 1 }

pnniRouteAddrPrefixLength OBJECT-TYPE
        SYNTAX        PnniPrefixLength
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The prefix length to be applied to the ATM End System
             Address prefix."
        ::= { pnniRouteAddrEntry 2 }

pnniRouteAddrIndex OBJECT-TYPE
        SYNTAX        Integer32 (1..65535)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "An index into the set of listings of connectivity to a
             given address prefix from a given local node."
        ::= { pnniRouteAddrEntry 3 }

pnniRouteAddrIfIndex OBJECT-TYPE
        SYNTAX        InterfaceIndex
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The local interface over which the reachable address can be
             reached.  The value zero indicates an unknown interface or
             reachability through a remote node.

             This object may only have a non-zero value if the value of
             the corresponding instance of pnniRouteAddrProto is other
             than 'pnni', pnniRouteAddrType is other than 'reject', and
             the node identified by pnniRouteAddrAdvertisingNodeId is
             instantiated within this switching system."
        ::= { pnniRouteAddrEntry 4 }

pnniRouteAddrAdvertisingNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The node ID of a node advertising reachability to the
             address prefix.  If the local node index is zero, then the
             advertising node ID must be set to all zeros."
        ::= { pnniRouteAddrEntry 5 }
pnniRouteAddrAdvertisedPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-create
```

```
        STATUS        current
        DESCRIPTION
            "The port identifier used from the advertising node to reach
             the given address prefix."
        DEFVAL { 0 }
        ::= { pnniRouteAddrEntry 6 }

pnniRouteAddrType OBJECT-TYPE
        SYNTAX        INTEGER {
                                other(1), -- not specified by this MIB
                                reject(2), -- route which discards
                                           -- traffic
                                internal(3),
                                exterior(4)
                                }
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The type (e.g. internal or exterior) of reachability from
             the advertising node to the address prefix.

             Reject(2) refers to an address prefix which, if matched,
             indicates that the message should be discarded as
             unreachable. This is used in some protocols as a means of
             correctly aggregating routes."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3"
        DEFVAL { exterior }
        ::= { pnniRouteAddrEntry 7 }

pnniRouteAddrProto OBJECT-TYPE
        SYNTAX        INTEGER {
                                other(1), -- not specified
                                local(2), -- e.g. ilmi
                                mgmt(3), -- configured by management,
                                       -- for example by SNMP or console
                                        -- the following are all dynamic
                                        -- routing protocols
                                pnni(4) -- ATM Forum PNNI
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The routing mechanism via which the connectivity from the
             advertising node to the reachable address prefix was
             learned."
        ::= { pnniRouteAddrEntry 8 }


pnniRouteAddrPnniScope OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The PNNI scope of advertisement (i.e. level of PNNI
             hierarchy) of the reachability from the advertising node to
             the address prefix."
        REFERENCE
            "ATM Forum PNNI 1.0 Sections 5.3.6, 5.9.1"
        ::= { pnniRouteAddrEntry 9 }

pnniRouteAddrVPCapability OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
```

```
        DESCRIPTION
            "Indicates whether VPCs can be established from the
             advertising node to the reachable address prefix."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.14.9.1 Table 5-34"
        ::= { pnniRouteAddrEntry 10 }

pnniRouteAddrMetricsTag OBJECT-TYPE
        SYNTAX        PnniMetricsTag
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The index into the pnniMetricsTable for the traffic
             parameter values that apply for the connectivity from the
             advertising node to the reachable address prefix.  There
             will be one or more entries in the pnniMetricsTable whose
             first instance identifier matches the value of this
             variable.

             If there are no parameters associated with this reachable
             address prefix then the distinguished value zero is used."
        DEFVAL { 0 }
        ::= { pnniRouteAddrEntry 11 }

pnniRouteAddrPtseId OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For reachable addresses learned via PNNI, this attribute
             contains the value of the PTSE Identifier for the PTSE
             being originated by the originating node which contains the
             information group(s) describing the reachable address.  For
             reachable addresses learned by means other than PNNI, this
             attribute is set to zero."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.2"
        ::= { pnniRouteAddrEntry 12 }

pnniRouteAddrOriginateAdvertisement OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Whether or not the reachable address specified by this
             entry is to be advertised by the local node into its PNNI
             routing domain.

             This object may only take on the value 'true' when the
             value of the corresponding instance of pnniRouteAddrProto
             is other than 'pnni'."
        DEFVAL { true }
        ::= { pnniRouteAddrEntry 13 }

pnniRouteAddrInfo OBJECT-TYPE
        SYNTAX        OBJECT IDENTIFIER
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "A reference to MIB definitions specific to the particular
             routing protocol which is responsible for this reachable
             address prefix, as determined by the value specified in the
             route's pnniRouteAddrProto value.  If this information is
             not present, its value should be set to the OBJECT
             IDENTIFIER zeroDotZero."
```

```
        DEFVAL { zeroDotZero }
        ::= { pnniRouteAddrEntry 14 }

pnniRouteAddrOperStatus OBJECT-TYPE
        SYNTAX        INTEGER {
                                inactive(1),
                                active(2), -- i.e. reachability to this
                                           -- prefix exists and is not
                                           -- being advertised in PNNI
                                advertised(3)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the reachable address prefix is
             operationally valid and whether it is being advertised by
             this node."
        ::= { pnniRouteAddrEntry 15 }

pnniRouteAddrTimeStamp OBJECT-TYPE
        SYNTAX        TimeStamp
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates when the connectivity from the advertising node
             to the reachable address prefix became known to the local
             node."
        ::= { pnniRouteAddrEntry 16 }

pnniRouteAddrRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "To create, delete, activate and de-activate a reachable
             address prefix."
        ::= { pnniRouteAddrEntry 17 }


-- Table of routes from nodes to reachable transit networks

pnniRouteTnsTable OBJECT-TYPE
        SYNTAX        SEQUENCE OF PnniRouteTnsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "A table containing all the attributes necessary to
             determine what transit networks the PNNI entity believes
             are reachable and to determine which nodes are advertising
             this reachability.  This table is also used to add static
             routes to reachable transit networks.  The local node index
             which received the reachability information, type of
             network identification, network identification plan,
             transit network identifier, and an index that distinguishes
             between multiple listings of connectivity to a given
             transit network from a given local node are combined to
             form an instance ID for this object."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3.2"
        ::= { pnniRoutingGroup 5 }

pnniRouteTnsEntry OBJECT-TYPE
        SYNTAX        PnniRouteTnsEntry
        MAX-ACCESS    not-accessible
        STATUS        current
```

```
        DESCRIPTION
            "An entry in the table, containing information about a
             reachable transit network."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3.2"
        INDEX         { pnniNodeIndex,
                        pnniRouteTnsType,
                        pnniRouteTnsPlan,
                        pnniRouteTnsId,
                        pnniRouteTnsIndex }
        ::= { pnniRouteTnsTable 1 }

PnniRouteTnsEntry ::=
        SEQUENCE {
                pnniRouteTnsType                TnsType,
                pnniRouteTnsPlan                TnsPlan,
                pnniRouteTnsId                  DisplayString,
                pnniRouteTnsIndex               Integer32,
                pnniRouteTnsIfIndex             InterfaceIndex,
                pnniRouteTnsAdvertisingNodeId   PnniNodeId,
                pnniRouteTnsAdvertisedPortId    PnniPortId,
                pnniRouteTnsRouteType           INTEGER,
                pnniRouteTnsProto               INTEGER,
                pnniRouteTnsPnniScope           PnniLevel,
                pnniRouteTnsVPCapability        TruthValue,
                pnniRouteTnsMetricsTag          PnniMetricsTag,
                pnniRouteTnsPtseId              Unsigned32,
                pnniRouteTnsOriginateAdvertisement      TruthValue,
                pnniRouteTnsInfo                OBJECT IDENTIFIER,
                pnniRouteTnsOperStatus          INTEGER,
                pnniRouteTnsTimeStamp           TimeStamp,
                pnniRouteTnsRowStatus           RowStatus
                }

pnniRouteTnsType OBJECT-TYPE
        SYNTAX        TnsType
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The type of network identification used for this transit
             network."
        ::= { pnniRouteTnsEntry 1 }

pnniRouteTnsPlan OBJECT-TYPE
        SYNTAX        TnsPlan
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The network identification plan according to which network
             identification has been assigned."
        ::= { pnniRouteTnsEntry 2 }

pnniRouteTnsId OBJECT-TYPE
        SYNTAX        DisplayString
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
            "The value of the transit network identifier."
        ::= { pnniRouteTnsEntry 3 }

pnniRouteTnsIndex OBJECT-TYPE
        SYNTAX        Integer32 (1..65535)
        MAX-ACCESS    not-accessible
        STATUS        current
        DESCRIPTION
```

```
            "An index into the set of listings of connectivity to a
             given transit network from a given local node."
        ::= { pnniRouteTnsEntry 4 }

pnniRouteTnsIfIndex OBJECT-TYPE
        SYNTAX        InterfaceIndex
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The local interface over which the transit network can be
             reached.  The value zero indicates an unknown interface or
             reachability through a remote node.

             This object may only have a non-zero value if the value of
             the corresponding instance of pnniRouteTnsProto is other
             than 'pnni' and the node identified by
             pnniRouteTnsAdvertisingNodeId is instantiated within this
             switching system."
        ::= { pnniRouteTnsEntry 5 }

pnniRouteTnsAdvertisingNodeId OBJECT-TYPE
        SYNTAX        PnniNodeId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The node ID of a node advertising reachability to the
             transit network.  If the local node index is zero, then the
             advertising node ID must also be set to zero."
        ::= { pnniRouteTnsEntry 6 }
pnniRouteTnsAdvertisedPortId OBJECT-TYPE
        SYNTAX        PnniPortId
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The port identifier used from the advertising node to
             reach the given transit network."
        DEFVAL { 0 }
        ::= { pnniRouteTnsEntry 7 }

pnniRouteTnsRouteType OBJECT-TYPE
        SYNTAX        INTEGER {
                                other(1), -- not specified by this MIB
                                exterior(4)
                                }
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The type (e.g. exterior or other) of reachability from the
             advertising node to the transit network."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.1.3"
        DEFVAL { exterior }
        ::= { pnniRouteTnsEntry 8 }

pnniRouteTnsProto OBJECT-TYPE
        SYNTAX        INTEGER {
                                other(1), -- not specified
                                local(2), -- e.g. ilmi
                                mgmt(3), -- configured by management,
                                       -- for example by SNMP or console
                                        -- the following are all dynamic
                                        -- routing protocols
                                pnni(4) -- ATM Forum PNNI
                                }
        MAX-ACCESS    read-only
```

```
        STATUS        current
        DESCRIPTION
            "The routing mechanism via which the connectivity from the
             advertising node to the transit network was learned."
        ::= { pnniRouteTnsEntry 9 }


pnniRouteTnsPnniScope OBJECT-TYPE
        SYNTAX        PnniLevel
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The PNNI scope of advertisement (i.e. level of PNNI
             hierarchy) of the reachability from the advertising node to
             the transit network."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.3.6"
        ::= { pnniRouteTnsEntry 10 }

pnniRouteTnsVPCapability OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "Indicates whether VPCs can be established from the
             advertising node to the reachable transit network."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.14.9.1 Table 5-34"
        ::= { pnniRouteTnsEntry 11 }

pnniRouteTnsMetricsTag OBJECT-TYPE
        SYNTAX        PnniMetricsTag
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "The index into the pnniMetricsTable for the traffic
             parameter values that apply for the connectivity from the
             advertising node to the transit network.  There will be one
             or more entries in the pnniMetricsTable whose first
             instance identifier matches the value of this variable.

             If there are no parameters associated with this transit
             network then the distinguished value zero is used."
        DEFVAL { 0 }
        ::= { pnniRouteTnsEntry 12 }

pnniRouteTnsPtseId OBJECT-TYPE
        SYNTAX        Unsigned32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "For reachable transit networks learned via PNNI, this
             attribute contains the value of the PTSE Identifier for the
             PTSE being originated by the originating node which
             contains the information group(s) describing the transit
             network.  For reachable transit networks learned by means
             other than PNNI, this attribute is set to zero."
        REFERENCE
            "ATM Forum PNNI 1.0 Section 5.8.2"
        ::= { pnniRouteTnsEntry 13 }

pnniRouteTnsOriginateAdvertisement OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-create
        STATUS        current
```

```
        DESCRIPTION
            "Whether or not the transit network specified by this entry
             is to be advertised by the local node into its PNNI routing
             domain.

             This object may only take on the value 'true' when the
             value of the corresponding instance of pnniRouteNodeProto
             is other than 'pnni'."
        DEFVAL { true }
        ::= { pnniRouteTnsEntry 14 }

pnniRouteTnsInfo OBJECT-TYPE
        SYNTAX        OBJECT IDENTIFIER
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "A reference to MIB definitions specific to the particular
             routing protocol which is responsible for this transit
             network, as determined by the value specified in the
             route's pnniRouteTnsProto value.  If this information is
             not present, its value should be set to the OBJECT
             IDENTIFIER zeroDotZero."
        DEFVAL { zeroDotZero }
        ::= { pnniRouteTnsEntry 15 }

pnniRouteTnsOperStatus OBJECT-TYPE
        SYNTAX        INTEGER {
                                inactive(1),
                                active(2), -- i.e. reachability to this
                                        -- transit network exists and is
                                        -- not being advertised in PNNI
                                advertised(3)
                                }
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the reachable transit network is
             operationally valid and whether it is being advertised by
             this node."
        ::= { pnniRouteTnsEntry 16 }

pnniRouteTnsTimeStamp OBJECT-TYPE
        SYNTAX        TimeStamp
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates how long the connectivity from the advertising
             node to the reachable transit network has been known to the
             local node."
        ::= { pnniRouteTnsEntry 17 }

pnniRouteTnsRowStatus OBJECT-TYPE
        SYNTAX        RowStatus
        MAX-ACCESS    read-create
        STATUS        current
        DESCRIPTION
            "To create, delete, activate and de-activate a reachable
             transit network."
        ::= { pnniRouteTnsEntry 18 }


-- conformance information

pnniMIBConformance
                  OBJECT IDENTIFIER ::= { pnniMIB 2 }
```

```
pnniMIBCompliances
                  OBJECT IDENTIFIER ::= { pnniMIBConformance 1 }
pnniMIBGroups
                  OBJECT IDENTIFIER ::= { pnniMIBConformance 2 }


-- compliance statements

pnniMIBCompliance MODULE-COMPLIANCE
        STATUS        current
        DESCRIPTION
            "The compliance statement for entities which implement
             the PNNI MIB.

             Groups of PNNI objects required for management of a minimum
             function node are identified by the suffix MinGroup.

             Groups of PNNI objects required for management of a border
             node are identified by the suffix BorderGroup.

             Groups of PNNI objects required for management of a PGL/LGN
             capable node are identified by the suffix LgnGroup.

             Groups of optional PNNI objects are identified by the
             suffix OptionalGroup."
        MODULE  -- this module
            MANDATORY-GROUPS { pnniGeneralMinGroup,
                               pnniNodeMinGroup,
                               pnniNodePglMinGroup,
                               pnniNodeTimerMinGroup,
                               pnniScopeMinGroup,
                               pnniIfMinGroup,
                               pnniLinkMinGroup,
                               pnniNbrPeerMinGroup,
                               pnniNbrPeerPortMinGroup }
        OBJECT pnniNodeId
        MIN-ACCESS read-only
        DESCRIPTION
            "Support for manual configuration of node IDs is optional."

        OBJECT pnniNodeLowest
        MIN-ACCESS read-only
        DESCRIPTION
            "Only switching systems that are PGL/LGN capable are allowed
             to provide write/create access to the pnniNodeLowest
             object."

        OBJECT pnniNodeRestrictedTransit
        MIN-ACCESS read-only
        DESCRIPTION
            "Support for the restricted transit capability is optional."

        OBJECT pnniNodeComplexRep
        MIN-ACCESS read-only
        DESCRIPTION
            "The ability to generate the complex node representation is
             only required for PGL/LGN capable switching systems, and is
             otherwise optional."

        OBJECT pnniNodeRowStatus
        SYNTAX INTEGER { active(1) }
        MIN-ACCESS read-only
        DESCRIPTION
            "The ability to create more than one node in a switching
             system is optional."
```

```
        OBJECT pnniNodePglLeadershipPriority
        MIN-ACCESS read-only
        DESCRIPTION
            "Only switching systems that are PGL/LGN capable are allowed
             to provide write/create access to the
             pnniNodePglLeadershipPriority object."

        OBJECT pnniIfNodeIndex
        MIN-ACCESS read-only
        DESCRIPTION
            "Write access to the pnniIfNodeIndex object is optional.  It
             only applies when there can be multiple lowest-level nodes
             in the switching system."

        OBJECT pnniIfVPCapability
        MIN-ACCESS read-only
        DESCRIPTION
            "The ability to support switched virtual paths is optional."

        ::= { pnniMIBCompliances 1 }

-- units of conformance

pnniGeneralMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniHighestVersion,
                  pnniLowestVersion,
                  pnniDtlCountOriginator,
                  pnniCrankbackCountOriginator,
                  pnniAltRouteCountOriginator,
                  pnniRouteFailCountOriginator,
                  pnniRouteFailUnreachableOriginator
                  }
        STATUS current
        DESCRIPTION
            "A collection of general PNNI objects required for
             management of a minimum function switching system."
        ::= { pnniMIBGroups 1 }

pnniGeneralBorderGroup OBJECT-GROUP
        OBJECTS {
                  pnniDtlCountBorder,
                  pnniCrankbackCountBorder,
                  pnniAltRouteCountBorder,
                  pnniRouteFailCountBorder,
                  pnniRouteFailUnreachableBorder
                  }
        STATUS current
        DESCRIPTION
            "A collection of general PNNI objects required for
             management of a border node."
        ::= { pnniMIBGroups 2 }

pnniNodeMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniNodeLevel,
                  pnniNodeId,
                  pnniNodeLowest,
                  pnniNodeAdminStatus,
                  pnniNodeOperStatus,
                  pnniNodeDomainName,
                  pnniNodeAtmAddress,
                  pnniNodePeerGroupId,
                  pnniNodeRestrictedTransit,
                  pnniNodeComplexRep,
```

```
                    pnniNodeRestrictedBranching,
                    pnniNodeDatabaseOverload,
                    pnniNodePtses,
                    pnniNodeRowStatus
                    }
        STATUS current
        DESCRIPTION
            "A collection of per node PNNI objects required for
             management of a minimum function switching system."
        ::= { pnniMIBGroups 3 }

pnniNodePglMinGroup OBJECT-GROUP
        OBJECTS {
                    pnniNodePglLeadershipPriority,
                    pnniNodePglInitTime,
                    pnniNodePglReelectTime ,
                    pnniNodePglState,
                    pnniNodePreferredPgl,
                    pnniNodePeerGroupLeader,
                    pnniNodePglTimeStamp,
                    pnniNodeActiveParentNodeId
                    }
        STATUS current
        DESCRIPTION
            "A collection of per node PGL election related PNNI objects
             required for management of a minimum function switching
             system."
        ::= { pnniMIBGroups 4 }

pnniNodePglLgnGroup OBJECT-GROUP
        OBJECTS {
                    pnniNodeCfgParentNodeIndex,
                    pnniNodePglOverrideDelay
                    }
        STATUS current
        DESCRIPTION
            "A collection of per node PGL election related PNNI objects
             required for management of a PGL/LGN capable switching
             system."
        ::= { pnniMIBGroups 5 }

pnniNodeTimerMinGroup OBJECT-GROUP
        OBJECTS {
                    pnniNodePtseHolddown,
                    pnniNodeHelloHolddown,
                    pnniNodeHelloInterval,
                    pnniNodeHelloInactivityFactor,
                    pnniNodePtseRefreshInterval,
                    pnniNodePtseLifetimeFactor,
                    pnniNodeRxmtInterval,
                    pnniNodePeerDelayedAckInterval,
                    pnniNodeAvcrPm,
                    pnniNodeAvcrMt,
                    pnniNodeCdvPm,
                    pnniNodeCtdPm
                    }
        STATUS current
        DESCRIPTION
            "A collection of per node PNNI objects required for
             management of timers and significant change thresholds in a
             minimum function switching system."
        ::= { pnniMIBGroups 6 }

pnniNodeTimerLgnGroup OBJECT-GROUP
        OBJECTS {
```

```
                pnniNodeHlinkInact
                }
        STATUS current
        DESCRIPTION
            "A collection of per node PNNI objects required for
             management of timers in a PGL/LGN capable switching
             system."
        ::= { pnniMIBGroups 7 }


pnniNodeSvccLgnGroup OBJECT-GROUP
        OBJECTS {
                pnniNodeSvccInitTime,
                pnniNodeSvccRetryTime,
                pnniNodeSvccCallingIntegrityTime,
                pnniNodeSvccCalledIntegrityTime,
                pnniNodeSvccTrafficDescriptorIndex
                }
        STATUS current
        DESCRIPTION
            "A collection of per node SVCC-based RCC related PNNI
             objects required for management of a PGL/LGN capable
             switching system."
        ::= { pnniMIBGroups 8 }

pnniScopeMinGroup OBJECT-GROUP
        OBJECTS {
                pnniScopeLocalNetwork,
                pnniScopeLocalNetworkPlusOne,
                pnniScopeLocalNetworkPlusTwo,
                pnniScopeSiteMinusOne,
                pnniScopeIntraSite,
                pnniScopeSitePlusOne,
                pnniScopeOrganizationMinusOne,
                pnniScopeIntraOrganization,
                pnniScopeOrganizationPlusOne,
                pnniScopeCommunityMinusOne,
                pnniScopeIntraCommunity,
                pnniScopeCommunityPlusOne,
                pnniScopeRegional,
                pnniScopeInterRegional,
                pnniScopeGlobal
                }
        STATUS current
        DESCRIPTION
            "A collection of per node scope mapping related PNNI objects
             required for management of a minimum function switching
             system."
        ::= { pnniMIBGroups 9 }

pnniSummaryLgnGroup OBJECT-GROUP
        OBJECTS {
                pnniSummaryType,
                pnniSummarySuppress,
                pnniSummaryState,
                pnniSummaryRowStatus
                }
        STATUS deprecated
        DESCRIPTION
            "A collection of PNNI objects required for controlling
             address summarization."
        ::= { pnniMIBGroups 10 }

pnniSummaryAddressLgnGroup OBJECT-GROUP
       OBJECTS {
```

```
      pnniSummaryAddressSuppress,
      pnniSummaryAddressState,
      pnniSummaryAddressRowStatus
      }
        STATUS current
        DESCRIPTION
          "A collection of PNNI objects required for controlling address
            summarization."
        ::= { pnniMIBGroups 31 }

pnniIfMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniIfNodeIndex,
                  pnniIfPortId,
                  pnniIfVPCapability,
                  pnniIfAdmWeightCbr,
                  pnniIfAdmWeightRtVbr,
                  pnniIfAdmWeightNrtVbr,
                  pnniIfAdmWeightAbr,
                  pnniIfAdmWeightUbr,
                  pnniIfRccServiceCategory,
                  pnniIfRccTrafficDescrIndex
                  }
        STATUS current
        DESCRIPTION
            "A collection of per interface PNNI objects required for
             management of a minimum function switching system."
        ::= { pnniMIBGroups 11 }

pnniIfBorderGroup OBJECT-GROUP
        OBJECTS {
                  pnniIfAggrToken
                  }
        STATUS current
        DESCRIPTION
            "A collection of per interface PNNI objects required for
             management of a border node."
        ::= { pnniMIBGroups 12 }

pnniLinkMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniLinkType,
                  pnniLinkVersion,
                  pnniLinkHelloState,
                  pnniLinkRemoteNodeId,
                  pnniLinkRemotePortId,
                  pnniLinkIfIndex,
                  pnniLinkRcvHellos,
                  pnniLinkXmtHellos
                  }
        STATUS current
        DESCRIPTION
            "A collection of per link PNNI objects required for
             management of a minimum function switching system."
        ::= { pnniMIBGroups 13 }

pnniLinkBorderOrLgnGroup OBJECT-GROUP
        OBJECTS {
                  pnniLinkDerivedAggrToken,
                  pnniLinkUpnodeId,
                  pnniLinkUpnodeAtmAddress,
                  pnniLinkCommonPeerGroupId
                  }
        STATUS current
        DESCRIPTION
```

```
            "A collection of per link PNNI objects required for
             management of a border node or a PGL/LGN capable switching
             system."
        ::= { pnniMIBGroups 14 }

pnniLinkLgnGroup OBJECT-GROUP
        OBJECTS {
                  pnniLinkSvccRccIndex
                  }
        STATUS current
        DESCRIPTION
            "A collection of per link PNNI objects required for
             management of a PGL/LGN capable switching system."
        ::= { pnniMIBGroups 15 }

pnniNbrPeerMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniNbrPeerState,
                  pnniNbrPeerPortCount,
                  pnniNbrPeerRcvDbSums,
                  pnniNbrPeerXmtDbSums,
                  pnniNbrPeerRcvPtsps,
                  pnniNbrPeerXmtPtsps,
                  pnniNbrPeerRcvPtseReqs,
                  pnniNbrPeerXmtPtseReqs,
                  pnniNbrPeerRcvPtseAcks,
                  pnniNbrPeerXmtPtseAcks
                  }
        STATUS current
        DESCRIPTION
            "A collection of per neighboring peer PNNI objects required
             for management of a minimum function switching system."
        ::= { pnniMIBGroups 16 }

pnniNbrPeerLgnGroup OBJECT-GROUP
        OBJECTS {
                  pnniNbrPeerSvccRccIndex
                  }
        STATUS current
        DESCRIPTION
            "A collection of per neighboring peer PNNI objects required
             for management of a PGL/LGN capable switching system."
        ::= { pnniMIBGroups 17 }

pnniNbrPeerPortMinGroup OBJECT-GROUP
        OBJECTS {
                  pnniNbrPeerPortFloodStatus
                   }
        STATUS current
        DESCRIPTION
            "A collection of per port to neighboring peer PNNI objects
             required for management of a minimum function switching
             system."
        ::= { pnniMIBGroups 18 }

pnniSvccRccLgnGroup OBJECT-GROUP
        OBJECTS {
                  pnniSvccRccVersion,
                  pnniSvccRccHelloState,
                  pnniSvccRccRemoteNodeId ,
                  pnniSvccRccRemoteAtmAddress,
                  pnniSvccRccRcvHellos,
                  pnniSvccRccXmtHellos,
                  pnniSvccRccIfIndex,
                  pnniSvccRccVpi,
```

```
                    pnniSvccRccVci
                    }
        STATUS current
        DESCRIPTION
            "A collection of per SVCC-based RCC PNNI objects required
             for management of a PGL/LGN capable switching system."
        ::= { pnniMIBGroups 19 }

pnniPtseOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniPtseType,
                    pnniPtseSequenceNum,
                    pnniPtseChecksum,
                    pnniPtseLifeTime,
                    pnniPtseInfo
                    }
        STATUS current
        DESCRIPTION
            "A collection of optional per PTSE PNNI objects."
        ::= { pnniMIBGroups 20 }


pnniMapOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniMapType,
                    pnniMapPeerGroupId,
                    pnniMapAggrToken,
                    pnniMapRemoteNodeId,
                    pnniMapRemotePortId,
                    pnniMapVPCapability,
                    pnniMapPtseId,
                    pnniMapMetricsTag
                    }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to create a map
             of nodes and links in the PNNI routing domain."
        ::= { pnniMIBGroups 21 }

pnniMapNodeOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniMapNodePeerGroupId,
                    pnniMapNodeAtmAddress,
                    pnniMapNodeRestrictedTransit,
                    pnniMapNodeComplexRep,
                    pnniMapNodeRestrictedBranching,
                    pnniMapNodeDatabaseOverload,
                    pnniMapNodeIAmLeader,
                    pnniMapNodeLeadershipPriority,
                    pnniMapNodePreferredPgl,
                    pnniMapNodeParentNodeId,
                    pnniMapNodeParentAtmAddress,
                    pnniMapNodeParentPeerGroupId,
                    pnniMapNodeParentPglNodeId
                   }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to create a map
             of nodes in the PNNI routing domain."
        ::= { pnniMIBGroups 22 }

pnniMapAddrOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniMapAddrAddress,
                    pnniMapAddrPrefixLength
```

```
                }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to create a map
             of reachable addresses in the PNNI routing domain."
        ::= { pnniMIBGroups 23 }

pnniMapTnsOptionalGroup OBJECT-GROUP
        OBJECTS {
                  pnniMapTnsId
                  }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to create a map
             of reachable transit networks in the PNNI routing domain."
        ::= { pnniMIBGroups 24 }

pnniMetricsOptionalGroup OBJECT-GROUP
        OBJECTS {
                  pnniMetricsClasses,
                  pnniMetricsGcacClp,
                  pnniMetricsAdminWeight,
                  pnniMetrics1,
                  pnniMetrics2,
                  pnniMetrics3,
                  pnniMetrics4,
                  pnniMetrics5,
                  pnniMetrics6,
                  pnniMetrics7,
                  pnniMetrics8,
                  pnniMetricsRowStatus
                  }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to manage
             metrics and attributes associated with PNNI entities."
        ::= { pnniMIBGroups 25 }

pnniRouteGeneralOptionalGroup OBJECT-GROUP
        OBJECTS {
                  pnniRouteNodeNumber,
                  pnniRouteAddrNumber
                  }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects."
        ::= { pnniMIBGroups 26 }

pnniRouteNodeOptionalGroup OBJECT-GROUP
        OBJECTS {
                  pnniRouteNodeDestPortId,
                  pnniRouteNodeProto,
                  pnniRouteNodeTimeStamp,
                  pnniRouteNodeInfo,
                  pnniRouteNodeGcacClp,
                  pnniRouteNodeFwdMetricAW,
                  pnniRouteNodeFwdMetric1,
                  pnniRouteNodeFwdMetric2,
                  pnniRouteNodeFwdMetric3,
                  pnniRouteNodeFwdMetric4,
                  pnniRouteNodeFwdMetric5,
                  pnniRouteNodeFwdMetric6,
                  pnniRouteNodeFwdMetric7,
                  pnniRouteNodeFwdMetric8,
                  pnniRouteNodeBwdMetricAW,
```

```
                    pnniRouteNodeBwdMetric1,
                    pnniRouteNodeBwdMetric2,
                    pnniRouteNodeBwdMetric3,
                    pnniRouteNodeBwdMetric4,
                    pnniRouteNodeBwdMetric5,
                    pnniRouteNodeBwdMetric6,
                    pnniRouteNodeBwdMetric7,
                    pnniRouteNodeBwdMetric8,
                    pnniRouteNodeVPCapability,
                    pnniRouteNodeStatus
                    }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to manage
             precalculated routes to nodes in the PNNI routing domain."
        ::= { pnniMIBGroups 27 }

pnniDTLOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniDTLNodeId,
                    pnniDTLPortId,
                    pnniDTLLinkType,
                    pnniDTLStatus
                    }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to manage
             precalculated routes to nodes in the PNNI routing domain."
        ::= { pnniMIBGroups 28 }

pnniRouteAddrOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniRouteAddrIfIndex,
                    pnniRouteAddrAdvertisingNodeId,
                    pnniRouteAddrAdvertisedPortId,
                    pnniRouteAddrType,
                    pnniRouteAddrProto,
                    pnniRouteAddrPnniScope,
                    pnniRouteAddrVPCapability,
                    pnniRouteAddrMetricsTag,
                    pnniRouteAddrPtseId,
                    pnniRouteAddrOriginateAdvertisement,
                    pnniRouteAddrInfo,
                    pnniRouteAddrOperStatus,
                    pnniRouteAddrTimeStamp,
                    pnniRouteAddrRowStatus
                    }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to manage routes
             to reachable addresses in the PNNI routing domain."
        ::= { pnniMIBGroups 29 }

pnniRouteTnsOptionalGroup OBJECT-GROUP
        OBJECTS {
                    pnniRouteTnsIfIndex,
                    pnniRouteTnsAdvertisingNodeId,
                    pnniRouteTnsAdvertisedPortId,
                    pnniRouteTnsRouteType,
                    pnniRouteTnsProto,
                    pnniRouteTnsPnniScope,
                    pnniRouteTnsVPCapability,
                    pnniRouteTnsMetricsTag,
                    pnniRouteTnsPtseId,
                    pnniRouteTnsOriginateAdvertisement,
```

```
                pnniRouteTnsInfo,
                pnniRouteTnsOperStatus,
                pnniRouteTnsTimeStamp,
                pnniRouteTnsRowStatus
                }
        STATUS current
        DESCRIPTION
            "A collection of optional PNNI objects used to manage routes
             to reachable transit networks in the PNNI routing domain."
        ::= { pnniMIBGroups 30 }

END
```

```
107)  Addendum SoftPVC MIB;  update revision clause, new date, add new
      revision and DESCRIPTION.
atmSoftPvcMIB MODULE-IDENTITY
      LAST-UPDATED      "9705016062100000Z"
      ORGANIZATION      "The ATM Forum."
      CONTACT-INFO
            "The ATM Forum
            2570 West El Camino Real, Suite 304
            Mountain View, CA 94040-1313 USA
            Phone:      +1 415-949-6700
            Fax:        +1 415-949-6705
            info@atmforum.com"
      DESCRIPTION
            "ATM Soft PVC MIB"
        REVISION        "9705010000Z"
        DESCRIPTION
                "Updated version of the Soft PVC MIB released with the
                PNNI V1.0 Errata and PICS (af-pnni-0081.000)."
      REVISION     "9606210000Z"
      DESCRIPTION
            "Initial version of this MIB module."
      ::= { atmfSoftPvc 1 }

108)  Addendum SoftPVC MIB;  add text to DESCRIPTION.
      atmSoftPVccTargetAddress
           SYNTAX       AtmAddr
           MAX-ACCESS   read-create
           STATUS       current
           DESCRIPTION
               "The target ATM Address of this Soft PVCC.  If no
               address is supplied, no attempts to establish the
               Soft PVCC are initiated."
           ::= { atmSoftPVccEntry 2 }

109)  Addendum SoftPVC MIB;  add two values and add text to DESCRIPTION.
      atmSoftPVccOperStatus     OBJECT-TYPE
           SYNTAX       INTEGER {
                              other(1),
                              establishmentInProgress(2),
                              connected(3),
                              retriesExhausted(4),
                              noAddressSupplied(5),
                              lowerLayerDown(6)
                              }
           MAX-ACCESS   read-only
           STATUS       current
           DESCRIPTION
               "Describes the status of the Soft PVCC. Valid values are:
                   other                  - none of the types specified below
                   establishmentInProgress - connection or party is not
                                             operational, but setup or add
                                             party attempts are ongoing
                   connected              - connection or party is currently
                                            operational
                   retriesExhausted       - retry limit has been reached and
                                            setup or add party attempts have
                                            ceased
                   noAddressSupplied      - no remote address has been
                                            configured, so no setup or add
                                            party attempts are initiated
                   lowerLayerDown         - underlying ATM interface is not
                                            operational

               When the row is not 'active', the value of this object is
               'other'."
```

```
          ::= { atmSoftPVccEntry 8 }
```

110) Addendum SoftPVC MIB; add text to DESCRIPTION.

```
     atmSoftPVpcTargetAddress  OBJECT-TYPE
          SYNTAX       AtmAddr
          MAX-ACCESS   read-create
          STATUS       current
          DESCRIPTION
              "The target ATM Address of this Soft PVPC.  If no
              address is supplied, no attempts to establish the
              Soft PVPC are initiated."
          ::= { atmSoftPVpcEntry 2 }
```

111) Addendum SoftPVC MIB; add two values and add text to DESCRIPTION.

```
     atmSoftPVpcOperStatus     OBJECT-TYPE
          SYNTAX       INTEGER {
                             other(1),
                             establishmentInProgress(2),
                             connected(3),
                             retriesExhausted(4),
                             noAddressSupplied(5),
                             lowerLayerDown(6)
                             }
          MAX-ACCESS   read-only
          STATUS       current
          DESCRIPTION
              "Describes the status of the Soft PVPC. Valid values are:
                   other                  - none of the types specified below
                   establishmentInProgress - connection or party is not
                                             operational, but setup or add
                                             party attempts are ongoing
                   connected              - connection or party is currently
                                            operational
                   retriesExhausted       - retry limit has been reached and
                                            setup or add party attempts have
                                            ceased
                   noAddressSupplied      - no remote address has been
                                            configured, so no setup or add
                                            party attempts are initiated
                   lowerLayerDown         - underlying ATM interface is not
                                            operational

              When the row is not 'active', the value of this object is
              'other'."
          ::= { atmSoftPVpcEntry 7 }
```

112) Addendum SoftPVC MIB; change "PVC" to "PVCC" and add text to DESCRIPTION.

```
     atmSoftPVccRetryInterval  OBJECT-TYPE
          SYNTAX       INTEGER (0..3600)
          UNITS        "seconds"
          MAX-ACCESS   read-create
          STATUS       current
          DESCRIPTION
              "Defines the period to wait before attempting
              to establish the Soft PVCC after the first failed call
              attempt.  The time to wait between subsequent call
              attempts may differ to implement a backoff scheme.
              Zero represents an infinite interval indicating no
              retries."
          DEFVAL { 10 }
          ::= { atmSoftPVccEntry 10 }
```

113) Addendum SoftPVC MIB; delete "connection" and add text to DESCRIPTION.

```
atmSoftPVpcRetryInterval  OBJECT-TYPE
     SYNTAX       INTEGER (0..3600)
     UNITS        "seconds"
     MAX-ACCESS   read-create
     STATUS       current
     DESCRIPTION
         "Defines the period to wait before attempting
         to establish the Soft PVPC ~~connection~~ after the first failed
         call attempt. ~~The time to wait between subsequent call
         attempts may differ to implement a backoff scheme.~~
         Zero represents an infinite interval indicating no
         retries."
     DEFVAL { 10 }
     ::= { atmSoftPVpcEntry 9 }
```

114) The new Soft PVC MIB as modified (by items 107 - 113 above) follows.

```
ATM-SOFT-PVC-MIB DEFINITIONS ::= BEGIN

IMPORTS
      enterprises                   FROM RFC1155-SMI
      MODULE-IDENTITY, OBJECT-TYPE,
      NOTIFICATION-TYPE,
      Counter32, Gauge32                  FROM SNMPv2-SMI
      TEXTUAL-CONVENTION, RowStatus,
      TruthValue, TimeStamp               FROM SNMPv2-TC
      MODULE-COMPLIANCE, OBJECT-GROUP           FROM SNMPv2-CONF
      ifIndex                             FROM IF-MIB
      atmVplVpi, atmVclVpi,
      atmVclVci                     FROM ATM-MIB;

atmSoftPvcMIB MODULE-IDENTITY
      LAST-UPDATED      "9705010000Z"
      ORGANIZATION      "The ATM Forum."
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      DESCRIPTION
            "ATM Soft PVC MIB"
        REVISION        "9705010000Z"
        DESCRIPTION
                "Updated version of the Soft PVC MIB released with the
                PNNI V1.0 Errata and PICS (af-pnni-0081.000)."
      REVISION    "9606210000Z"
      DESCRIPTION
            "Initial version of this MIB module."
      ::= { atmfSoftPvc 1 }

atmForum          OBJECT IDENTIFIER ::= { enterprises 353 }
atmForumNetworkManagement     OBJECT IDENTIFIER ::= { atmForum 5 }
atmfSoftPvc       OBJECT IDENTIFIER ::= { atmForumNetworkManagement 5 }

atmSoftPvcMIBObjects  OBJECT IDENTIFIER ::= { atmSoftPvcMIB 1 }
atmSoftPvcMIBTraps    OBJECT IDENTIFIER ::= { atmSoftPvcMIB 2 }

AtmAddr ::= TEXTUAL-CONVENTION
      STATUS  current
      DESCRIPTION
            "The ATM address used by the network entity.
            The address types are: no address (0 octets),
            E.164 (8 octets)and NSAP (20 octets).
            Note: The E.164 address is encoded in BCD format."
      SYNTAX    OCTET STRING (SIZE(0|8|20))
--
-- This MIB contains five tables and a number of scalars. The scalars
-- contain overall status information and counters. The tables are:
--     Soft PVC VCCs - manage Soft PVCC at originating switch
--     Soft PVC VPCs - manage Soft PVPC at originating switch
--     Interface Soft PVC Address
--     Currently failing Soft PVCC table
--     Currently failing Soft PVPC table
--
-- Traffic statistics for Soft PVCCs and Soft PVPCs are accessible
-- via the atmVclStatTable and atmVplStatTable, as defined in the
-- Supplemental AtomMIB
```

```
atmSoftPvcBaseGroup     OBJECT IDENTIFIER ::= { atmSoftPvcMIBObjects 1}

atmSoftPvcCallFailuresTrapEnable    OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
            "Allows the generation of traps in response to call
            failures. By default, this object is set to 'false'."
      ::= { atmSoftPvcBaseGroup 1 }


atmSoftPvcCallFailures  OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "The number of times a series of call attempts has failed to
            establish a Soft PVCC or Soft PVPC. The number of call
            attempts in a series is determined by
            atmSoftPVccRetryThreshold or atmSoftPVpcRetryThreshold,
            respectively."
      ::= {atmSoftPvcBaseGroup 2 }


atmSoftPvcCurrentlyFailingSoftPVccs OBJECT-TYPE
      SYNTAX      Gauge32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "The current number of Soft PVCCs for which there is
            an active row in the atmSoftPVccTable having an
            atmSoftPVccOperStatus with a value other than 'connected'."
      ::= { atmSoftPvcBaseGroup 3 }


atmSoftPvcCurrentlyFailingSoftPVpcs OBJECT-TYPE
      SYNTAX      Gauge32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "The current number of Soft PVPCs for which there is an
            active row in the atmSoftPVpcTable having an
            atmSoftPVpcOperStatus with a value other than 'connected'."
      ::= { atmSoftPvcBaseGroup 4 }


atmSoftPvcNotificationInterval      OBJECT-TYPE
      SYNTAX      INTEGER (0..3600)
      UNITS       "seconds"
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
            "The minimum interval between the sending
            of atmSoftPvcCallFailuresTrap notifications."
      DEFVAL { 30 }
      ::= { atmSoftPvcBaseGroup 5 }


--
-- Table to manage Soft PVCCs.
--

atmSoftPVccTable  OBJECT-TYPE
      SYNTAX      SEQUENCE OF AtmSoftPVccEntry
```

```
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "The (conceptual) table used to manage Soft
            Permanent Virtual Channel Connections (Soft PVCCs).
            The Soft PVCC table is applicable only to switches."
      ::= { atmSoftPvcMIBObjects 2 }


atmSoftPVccEntry  OBJECT-TYPE
      SYNTAX      AtmSoftPVccEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "Each entry in this table represents a  Soft
            Permanent Virtual Channel Connection (Soft PVCC)
            originating at a switch interface.

            A Soft PVCC is a VCC that is:
              - provisioned at the originating (source)
                  interface of the connection
              - established by signalling procedures
                  across a network to a destination interface.

            A row in the atmVclTable must be created,
            defining a VCL on the source interface, prior to
            creating an atmSoftPVccEntry row. The row in the
            atmVclTable must be active prior to activating the
            atmSoftPVccEntry row.

            The contents of this table reflect only the
            characteristics unique to a Soft PVCC. The traffic
            parameters are defined in the VCL row for the source
            interface, as specified in the ATOMMIB (RFC1695) and
            the forthcoming addition, the Supplemental ATOMMIB.

            Note that the atmSigDescrParamTable contains some objects
            such as the AAL parameters, Broadband high layer
            information and Broadband low layer information
            elements which are used to carry end-to-end information.
            For this reason, these objects are not relevant to Soft
            PVCCs.

            When a row is made active, an attempt is made
            to set up a switched connection to an interface at
            the destination switch. No objects (other than
            atmSoftPVccRowStatus) can be set while the row is
            active.

            At the destination, the VCL may be defined (but
            not cross-connected) prior to arrival of the Setup
            request.

            The combination of ifIndex, atmVclVpi, and atmVclVci
            specified in the index clause of this entry serves to
            identify the VCL on the source interface. The
            atmSoftPVccLeafReference object aids in distinguishing
            between leaves of a point-to-multipoint Soft PVCC."
      INDEX { ifIndex,
            atmVclVpi,
            atmVclVci,
            atmSoftPVccLeafReference }
      ::= { atmSoftPVccTable 1 }
```

```
AtmSoftPVccEntry ::=
      SEQUENCE    {
                  atmSoftPVccLeafReference            INTEGER,
                  atmSoftPVccTargetAddress            AtmAddr,
                  atmSoftPVccTargetSelectType         INTEGER,
                  atmSoftPVccTargetVpi                INTEGER,
                  atmSoftPVccTargetVci                INTEGER,
                  atmSoftPVccLastReleaseCause         INTEGER,
                  atmSoftPVccLastReleaseDiagnostic    OCTET STRING,
                  atmSoftPVccOperStatus               INTEGER,
                  atmSoftPVccRestart                  INTEGER,
                  atmSoftPVccRetryInterval            INTEGER,
                  atmSoftPVccRetryTimer               INTEGER,
                  atmSoftPVccRetryThreshold           INTEGER,
                  atmSoftPVccRetryFailures            Gauge32,
                  atmSoftPVccRetryLimit               INTEGER,
                  atmSoftPVccRowStatus                RowStatus
                  }


atmSoftPVccLeafReference OBJECT-TYPE
      SYNTAX      INTEGER  (1..65535)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "An arbitrary integer which, in the case of the
            source VCL having an atmVclCastType of
            'p2mpRoot', serves to distinguish between the
            multiple leaves attached to a root of a
            point-to-multipoint Soft PVCC. If the atmVclCastType
            is not 'p2mpRoot' the value 1 shall be used."
      ::= { atmSoftPVccEntry 1 }


atmSoftPVccTargetAddress      OBJECT-TYPE
      SYNTAX      AtmAddr
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "The target ATM Address of this Soft PVCC.  If no
                address is supplied, no attempts to establish the
                Soft PVCC are initiated."
      ::= { atmSoftPVccEntry 2 }


atmSoftPVccTargetSelectType   OBJECT-TYPE
      SYNTAX      INTEGER {
                        required(1),
                        any(2)
                  }
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Indicates whether the target VPI/VCI values
            are to be used at the destination.

            If the value 'any' is specified, the destination
            switch will choose the VPI/VCI values. In such a
            case, once the Soft PVCC atmSoftPVccOperStatus
            value is 'connected', the value of this object
            changes to 'required', such that the same VPI/VCI
            values will continue to be used even if the connection
            is subsequently torn down and re-established. The
            VPI/VCI values chosen will be available for reading in
            atmSoftPVccTargetVpi and atmSoftPVccTargetVci.
```

```
            If the value 'required' is specified, then values
            must be supplied for objects atmSoftPVccTargetVpi
            and atmSoftPVccTargetVci prior to activation of the
            row. These values are then to be used at the destination."
      DEFVAL { required }
      ::= { atmSoftPVccEntry 3 }


atmSoftPVccTargetVpi    OBJECT-TYPE
      SYNTAX      INTEGER (0..4095)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "The VPI value of the VCL used at the target interface.
            This value is not relevant when the value of
            atmSoftPVccTargetSelectType is 'any'."
      DEFVAL { 0 }
      ::= { atmSoftPVccEntry 4 }


atmSoftPVccTargetVci    OBJECT-TYPE
      SYNTAX      INTEGER  (0..65535)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "The VCI value of the VCL used at the target interface.
            This value must be filled in when the
            atmSoftPVccTargetSelectType is set to 'required'.This
            value is not relevant when the value of
            atmSoftPVccTargetSelectType is 'any'."
      ::= { atmSoftPVccEntry 5 }


atmSoftPVccLastReleaseCause   OBJECT-TYPE
      SYNTAX      INTEGER(1..127)
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Value of the Cause field of the Cause
            Information Element in the last RELEASE
            signalling message received for this Soft PVCC.
            Indicates the reason for the Release."
      ::= { atmSoftPVccEntry 6 }


atmSoftPVccLastReleaseDiagnostic    OBJECT-TYPE
      SYNTAX      OCTET STRING (SIZE(0..8))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Value of the first 8 bytes of diagnostic information
            from the Cause field of the Cause Information Element
            in the last RELEASE signalling message received for
            this Soft PVCC."
      ::= { atmSoftPVccEntry 7 }


atmSoftPVccOperStatus     OBJECT-TYPE
      SYNTAX      INTEGER {
                        other(1),
                        establishmentInProgress(2),
                        connected(3),
                        retriesExhausted(4),
                                noAddressSupplied(5),
                                lowerLayerDown(6)
```

```
                        }
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Describes the status of the Soft PVCC.  Valid values
                are:
                   other              - none of the types specified below
                   establishmentInProgress - connection or party is not
                                             operational, but setup or add
                                             party attempts are ongoing
                   connected          - connection or party is currently
                                        operational
                   retriesExhausted   - retry limit has been reached and
                                        setup or add party attempts have
                                        ceased
                   noAddressSupplied  - no remote address has been
                                        configured, so no setup or add
                                        party attempts are initiated
                   lowerLayerDown     - underlying ATM interface is not
                                        operational
                When the row is not 'active', the value of this
            object is 'other'."
      ::= { atmSoftPVccEntry 8 }


atmSoftPVccRestart      OBJECT-TYPE
      SYNTAX      INTEGER {
                  restart(1),
                  noop(2)
                  }
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "When the value is set to 'restart' the Soft PVCC
            is released if necessary and a new setup procedure
            is begun. As a result of this action, the
            atmSoftPVccOperStatus object transitions to
            'establishmentInProgress' (if not already in this state)
            and the atmSoftPVccRetryFailures object is cleared

            When the value is set to 'noop' no operation is
            performed. When read, the value 'noop' is returned."
      ::= { atmSoftPVccEntry 9 }


atmSoftPVccRetryInterval      OBJECT-TYPE
      SYNTAX      INTEGER (0..3600)
      UNITS       "seconds"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Defines the period to wait before attempting
            to establish the Soft PVCC after the first failed call
            attempt.  The time to wait between subsequent call
                attempts may differ to implement a backoff scheme.
                Zero represents an infinite interval indicating no
            retries."
      DEFVAL { 10 }
      ::= { atmSoftPVccEntry 10 }


atmSoftPVccRetryTimer   OBJECT-TYPE
      SYNTAX      INTEGER (0..86400)
      UNITS       "seconds"
      MAX-ACCESS  read-only
```

```
      STATUS      current
      DESCRIPTION
            "Indicates the current value of the retry timer for
            this connection. When the value reaches zero an attempt
            will be made to establish the Soft PVCC. When the timer
            is not running, the value zero shall be returned."
      ::= { atmSoftPVccEntry 11 }


atmSoftPVccRetryThreshold     OBJECT-TYPE
      SYNTAX      INTEGER (0..65535)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Indicates the number of consecutive call setup attempts for
            the same Soft PVCC which need to fail before the
            atmSoftPvcCallFailures object is incremented. A value of
            zero indicates that an infinite number of call attempts
            are required to increment the atmSoftPvcCallFailures object
            and thus disables alarms for the Soft PVCC."
      DEFVAL { 1 }
      ::= { atmSoftPVccEntry 12 }


atmSoftPVccRetryFailures      OBJECT-TYPE
      SYNTAX      Gauge32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Indicates how many attempts to establish the connection
            have failed.  This count is reset whenever a connection
            is successfully established or the Soft PVCC is restarted."
      ::= { atmSoftPVccEntry 13 }


atmSoftPVccRetryLimit   OBJECT-TYPE
      SYNTAX      INTEGER (0..65535)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Sets a maximum limit on how many consecutive unsuccessful
            call setup attempts can be made before stopping the attempt
            to set up the connection. If this limit is reached then
            management action will be required (e.g. setting
            atmSoftPVccRestart to 'restart') to initiate a new attempt
            to establish the connection. A value of zero indicates
            no limit - the attempts will continue until successful."
      DEFVAL { 0 }
      ::= { atmSoftPVccEntry 14 }


atmSoftPVccRowStatus    OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Used to create and delete a Soft PVCC. When this
            object is set to 'active' an attempt is made to
            set up the Soft PVCC. When this object has the value
            'active' and is set to another value, any
            set-up or connection in-progress is released."
      ::= { atmSoftPVccEntry 15 }


-- Table to manage Soft PVPCs
```

```
--
-- The following MIB definition includes support for point to
-- multipoint Soft PVPCs. Version 1.0 of the PNNI specification does
-- not allow the use of point to multipoint Soft PVPCs. The value
-- of atmSoftPVpcLeafReference should always be set to 1 indicating
-- a point to point Soft PVPC.
--


atmSoftPVpcTable  OBJECT-TYPE
      SYNTAX      SEQUENCE OF AtmSoftPVpcEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "The (conceptual) table used to manage Soft
            Permanent Virtual Path Connections (Soft PVPCs)
            The Soft PVPC table is applicable only to switches."
      ::= { atmSoftPvcMIBObjects 3 }


atmSoftPVpcEntry  OBJECT-TYPE
      SYNTAX      AtmSoftPVpcEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "Each entry in this table represents a  Soft
            Permanent Virtual Path Connection (Soft PVPC)
            originating at a switch interface.

            A Soft PVPC is a VPC that is:
              - provisioned at the originating (source)
                  interface of the connection
              - established by signalling procedures
                  across a network to a destination interface.

            A row in the atmVplTable must be created,
            defining a VPL on the source interface, prior to
            creating an atmSoftPVpcEntry row. The row in the
            atmVplTable must be active prior to activating the
            atmSoftPVpcEntry row.

            The contents of this table reflect only the
            characteristics unique to a Soft PVPC. The traffic
            parameters are defined in the VPL row for the source
            interface, as specified in the ATOMMIB (RFC1695) and
            the forthcoming addition, the Supplemental ATOMMIB.

            Note that the atmSigDescrParamTable contains some
            objects such as the AAL parameters, Broadband high
            layer information, and Broadband low layer information
            elements which are used to carry end-to-end information.
            For this reason, these objects are not relevant to Soft
            PVPCs.

            When a row is made active, an attempt is made
            to set up a switched connection to an interface at
            the destination switch. No objects (other than
            atmSoftPVpcRowStatus) can be set while the row is
            active.

            At the destination, the VPL may be defined (but
            not cross-connected) prior to arrival of the Setup
            request.

            The combination of ifIndex, atmVplVpi specified
```

```
            in the index clause of this entry serves to
            identify the VPL on the source interface. The
            atmSoftPVpcLeafReference object aids in distinguishing
            between leaves of a point-to-multipoint Soft PVPC."
      INDEX { ifIndex,
            atmVplVpi,
            atmSoftPVpcLeafReference }
      ::= { atmSoftPVpcTable 1 }


AtmSoftPVpcEntry ::=
      SEQUENCE {
            atmSoftPVpcLeafReference            INTEGER,
            atmSoftPVpcTargetAddress            AtmAddr,
            atmSoftPVpcTargetSelectType         INTEGER,
            atmSoftPVpcTargetVpi                INTEGER,
            atmSoftPVpcLastReleaseCause         INTEGER,
            atmSoftPVpcLastReleaseDiagnostic    OCTET STRING,
            atmSoftPVpcOperStatus               INTEGER,
            atmSoftPVpcRestart                  INTEGER,
            atmSoftPVpcRetryInterval            INTEGER,
            atmSoftPVpcRetryTimer               INTEGER,
            atmSoftPVpcRetryThreshold           INTEGER,
            atmSoftPVpcRetryFailures            Gauge32,
            atmSoftPVpcRetryLimit               INTEGER,
            atmSoftPVpcRowStatus                RowStatus
            }


atmSoftPVpcLeafReference      OBJECT-TYPE
      SYNTAX      INTEGER  (1..63535)
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "An arbitrary integer which, in the case of the
            source VPL having a atmVplCastType of
            'p2mpRoot', serves to distinguish between the
            multiple leaves attached to a root of a
            point-to-multipoint Soft PVPC.

            If the atmVplCastType is not 'p2mpRoot', the
            value 1 shall be used."
      ::= { atmSoftPVpcEntry 1 }


atmSoftPVpcTargetAddress      OBJECT-TYPE
      SYNTAX      AtmAddr
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "The target ATM Address of this Soft PVPC.  If no
                address is supplied, no attempts to establish the
                Soft PVPC are initiated."
      ::= { atmSoftPVpcEntry 2 }


atmSoftPVpcTargetSelectType   OBJECT-TYPE
      SYNTAX      INTEGER {
                  required(1),
                  any(2)
                  }
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Indicates whether the target VPI value
```

```
            is to be used at the destination.
            If the value 'any' is specified, the
            destination switch will choose the VPI
            value. In such a case, once the Soft PVPC
            atmSoftPVpcOperStatus value is 'connected',
            the value of this object changes to 'required',
            such that the same VPI value will continue to
            be used even if the connection is subsequently
            torn down and re-established. The VPI value
            chosen will be available for reading in
            atmSoftPVpcTargetVpi.

            If the value 'required' is specified, then
            a value must be supplied for object
            atmSoftPVpcTargetVpi prior to activation
            of the row. This value is then to be used
            at the destination."
      DEFVAL { required }
      ::= { atmSoftPVpcEntry 3 }


atmSoftPVpcTargetVpi    OBJECT-TYPE
      SYNTAX      INTEGER (0..4095)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "The VPI value of the VPL used at the
            target interface.

            This value must be filled in when the
            atmSoftPVpcTargetSelectType is set to 'required'.
            This value is not relevant when the value of
            atmSoftPVpcTargetSelectType is 'any'."
      ::= { atmSoftPVpcEntry 4 }


atmSoftPVpcLastReleaseCause   OBJECT-TYPE
      SYNTAX      INTEGER(1..127)
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Value of the Cause field of the Cause
            Information Element in the last RELEASE
            signalling message received for this Soft PVPC.
            Indicates the reason for the Release."
      ::= { atmSoftPVpcEntry 5 }


atmSoftPVpcLastReleaseDiagnostic    OBJECT-TYPE
      SYNTAX      OCTET STRING (SIZE(0..8))
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Value of the first 8 bytes of diagnostic information
            from the Cause field of the Cause Information Element
            in the last RELEASE signalling message received for
            this Soft PVPC."
      ::= { atmSoftPVpcEntry 6 }


atmSoftPVpcOperStatus   OBJECT-TYPE
      SYNTAX      INTEGER {
                        other(1),
                        establishmentInProgress(2),
                        connected(3),
```

```
                        retriesExhausted(4),
                                noAddressSupplied(5),
                                lowerLayerDown(6)
                        }
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Describes the status of the Soft PVPC.
                  other              - none of the types specified below
                  establishmentInProgress - connection or party is not
                                            operational, but setup or add
                                            party attempts are ongoing
                  connected          - connection or party is currently
                                       operational
                  retriesExhausted   - retry limit has been reached and
                                       setup or add party attempts have
                                       ceased
                  noAddressSupplied  - no remote address has been
                                       configured, so no setup or add
                                       party attempts are initiated
                  lowerLayerDown     - underlying ATM interface is not
                                       operational
               When the row is not 'active', the value of this
            object is 'other'."
      ::= { atmSoftPVpcEntry 7 }


atmSoftPVpcRestart      OBJECT-TYPE
      SYNTAX      INTEGER {
                        restart(1),
                        noop(2)
                        }
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "When the value is set to 'restart', the Soft PVPC is
            released if necessary and a new setup procedure is begun.
            As a result of this action, the atmSoftPVpcOperStatus
            object transitions to 'establishmentInProgress' (if not
            already in this state) and the atmSoftPVpcRetryFailures
            object is cleared.

            When the value is set to 'noop', no operation is performed.
            When read, the value 'noop' is returned."
      ::= { atmSoftPVpcEntry 8 }


atmSoftPVpcRetryInterval      OBJECT-TYPE
      SYNTAX      INTEGER (0..3600)
      UNITS       "seconds"
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Defines the period to wait before attempting
            to establish the Soft PVPC after the first failed
                call attempt.  The time to wait between subsequent
                call attempts may differ to implement a backoff scheme.
                Zero represents an infinite interval indicating no
                retries."
      DEFVAL { 10 }
      ::= { atmSoftPVpcEntry 9 }


atmSoftPVpcRetryTimer   OBJECT-TYPE
      SYNTAX      INTEGER (0..86400)
```

```
      UNITS       "seconds"
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Indicates the current value of the retry timer for
            this connection. When the value reaches zero an attempt
            will be made to establish the Soft PVPC. When the
            timer is not running, the value zero shall be returned."
      ::= { atmSoftPVpcEntry 10 }


atmSoftPVpcRetryThreshold  OBJECT-TYPE
      SYNTAX      INTEGER (0..65535)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Indicates the number of consecutive call setup attempts for
            the same Soft PVPC which need to fail before the
            atmSoftPvcCallFailures object is incremented. A value of
            zero indicates that an infinite number of call attempts
            are required to increment the atmSoftPvcCallFailures object
            and thus disables alarms for the Soft PVPC."
      DEFVAL { 1 }
      ::= { atmSoftPVpcEntry 11 }


atmSoftPVpcRetryFailures      OBJECT-TYPE
      SYNTAX      Gauge32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "Indicates how many attempts to establish the connection
            have failed.  This count is reset whenever a connection
            is successfully established or the Soft PVPC is restarted."
      ::= { atmSoftPVpcEntry 12 }


atmSoftPVpcRetryLimit   OBJECT-TYPE
      SYNTAX      INTEGER (0..65535)
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Sets a maximum limit on how many consecutive unsuccessful
            call setup attempts can be made before stopping the attempt
            to set up the connection. If this limit is reached then
            management action will be required (e.g. setting
            atmSoftPVpcRestart to 'restart') to initiate a new attempt
            to establish the connection. A value of zero indicates no
            limit - the attempts will continue until successful."
      DEFVAL { 0 }
      ::= { atmSoftPVpcEntry 13 }


atmSoftPVpcRowStatus    OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Used to create and delete a Soft PVPC. When this
            object is set to 'active' an attempt is made to
            set up the Soft PVPC. When this object has the value
            'active' and is set to another value, any
            set-up or connection in-progress is released."
      ::= { atmSoftPVpcEntry 14 }
```

```
--
-- This table is used to configure one or more ATM addresses
-- prior to setting up Soft PVCCs or Soft PVPCs at an ATM
-- interface in a node.
-- In addition, prior to setting up a Soft PVC at the source
-- interface, this table can be consulted at the destination
-- interface.
--

atmInterfaceSoftPvcAddressTable     OBJECT-TYPE
      SYNTAX      SEQUENCE OF AtmInterfaceSoftPvcAddressEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "This table is used to configure ATM addresses at
            an ATM interface on this node prior to setting up
            Soft PVPCs or Soft PVPCs at that interface."
      ::= { atmSoftPvcMIBObjects 4 }


atmInterfaceSoftPvcAddressEntry     OBJECT-TYPE
      SYNTAX      AtmInterfaceSoftPvcAddressEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "ATM address entry for configuring Soft PVCCs or
            Soft PVPCs at an ATM interface."
      INDEX { ifIndex, atmInterfaceSoftPvcAddress }
      ::= { atmInterfaceSoftPvcAddressTable 1 }


AtmInterfaceSoftPvcAddressEntry ::=
      SEQUENCE {
            atmInterfaceSoftPvcAddress          AtmAddr,
            atmInterfaceSoftPvcAddressRowStatus RowStatus
            }


atmInterfaceSoftPvcAddress    OBJECT-TYPE
      SYNTAX      AtmAddr
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "Specifies the address that can be used to establish a Soft
            PVCC or Soft PVPC to this interface."
      ::= { atmInterfaceSoftPvcAddressEntry 1 }


atmInterfaceSoftPvcAddressRowStatus OBJECT-TYPE
      SYNTAX      RowStatus
      MAX-ACCESS  read-create
      STATUS      current
      DESCRIPTION
            "Used to create and delete an ATM address at this interface
            for setting up Soft PVCCs or Soft PVPCs."
      ::= { atmInterfaceSoftPvcAddressEntry 2 }


-- Currently Failing Soft PVCC table


atmCurrentlyFailingSoftPVccTable    OBJECT-TYPE
      SYNTAX      SEQUENCE OF AtmCurrentlyFailingSoftPVccEntry
      MAX-ACCESS  not-accessible
      STATUS      current
```

```
      DESCRIPTION
            "A table indicating all Soft Permanent Virtual Channel
            Connections (Soft PVCCs) for which the atmSoftPVccRowStatus
            is 'active' and the atmSoftPVccOperStatus is other than
            'connected'."
      ::= { atmSoftPvcMIBObjects 5 }


atmCurrentlyFailingSoftPVccEntry    OBJECT-TYPE
      SYNTAX      AtmCurrentlyFailingSoftPVccEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "Each entry in this table represents a Soft Permanent
            Virtual Channel Connection (Soft PVCC) for which the
            atmSoftPVccRowStatus is 'active' and the
            atmSoftPVccOperStatus is other than 'connected'."
      INDEX { ifIndex,
            atmVclVpi,
            atmVclVci,
            atmSoftPVccLeafReference }
      ::= { atmCurrentlyFailingSoftPVccTable 1 }


AtmCurrentlyFailingSoftPVccEntry ::=
      SEQUENCE {
            atmCurrentlyFailingSoftPVccTimeStamp      TimeStamp
            }


atmCurrentlyFailingSoftPVccTimeStamp      OBJECT-TYPE
      SYNTAX      TimeStamp
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "The time at which this Soft PVCC began to fail."
      ::= { atmCurrentlyFailingSoftPVccEntry 1 }



-- Currently Failing Soft PVPC table

atmCurrentlyFailingSoftPVpcTable    OBJECT-TYPE
      SYNTAX      SEQUENCE OF AtmCurrentlyFailingSoftPVpcEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "A table indicating all Soft Permanent Virtual Path
            Connections (Soft PVPCs) for which the atmSoftPVpcRowStatus
            is 'active' and the atmSoftPVpcOperStatus is other than
            'connected'."
      ::= { atmSoftPvcMIBObjects 6 }


atmCurrentlyFailingSoftPVpcEntry    OBJECT-TYPE
      SYNTAX      AtmCurrentlyFailingSoftPVpcEntry
      MAX-ACCESS  not-accessible
      STATUS      current
      DESCRIPTION
            "Each entry in this table represents a Soft Permanent
            Virtual Path Connection (Soft PVPC) for which the
            atmSoftPVpcRowStatus is 'active' and the
            atmSoftPVpcOperStatus is other than 'connected'."
      INDEX { ifIndex,
```

```
            atmVclVpi,
            atmSoftPVpcLeafReference }
      ::= { atmCurrentlyFailingSoftPVpcTable 1 }


AtmCurrentlyFailingSoftPVpcEntry ::=
      SEQUENCE {
            atmCurrentlyFailingSoftPVpcTimeStamp      TimeStamp
            }


atmCurrentlyFailingSoftPVpcTimeStamp      OBJECT-TYPE
      SYNTAX      TimeStamp
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
            "The time at which this Soft PVPC began to fail."
      ::= { atmCurrentlyFailingSoftPVpcEntry 1 }


-- Soft PVC Traps

atmSoftPvcTraps         OBJECT IDENTIFIER ::= { atmSoftPvcMIBTraps 1 }

atmSoftPvcTrapsPrefix   OBJECT IDENTIFIER ::= { atmSoftPvcTraps 0 }

atmSoftPvcCallFailuresTrap    NOTIFICATION-TYPE
      OBJECTS     { atmSoftPvcCallFailures,
                  atmSoftPvcCurrentlyFailingSoftPVccs,
                  atmSoftPvcCurrentlyFailingSoftPVpcs }
      STATUS      current
      DESCRIPTION
            "A notification indicating that one or more series of
            call attempts in trying to establish a Soft PVPC or
            Soft PVCC have failed since the last
            atmSoftPvcCallFailureTrap was sent. If this trap has
            not been sent for the last atmSoftPvcNotificationInterval,
            then it will be sent on the next increment of
            atmSoftPvcCallFailures."
::= { atmSoftPvcTrapsPrefix 1 }


-- conformance information

atmSoftPvcMIBConformance
            OBJECT IDENTIFIER ::= { atmSoftPvcMIB 3 }
atmSoftPvcMIBCompliances
            OBJECT IDENTIFIER ::= { atmSoftPvcMIBConformance 1 }
atmSoftPvcMIBGroups
            OBJECT IDENTIFIER ::= { atmSoftPvcMIBConformance 2 }


-- compliance statements

atmSoftPvcMIBCompliance MODULE-COMPLIANCE
      STATUS      current
      DESCRIPTION
            "The compliance statement for the ATM Soft PVC group."
      MODULE      -- this module
      MANDATORY-GROUPS
            { atmSoftPvcBaseMIBGroup, atmSoftPvcVccMIBGroup,
              atmSoftPvcAddressMIBGroup
            }
      OBJECT atmSoftPVccRetryLimit
      MIN-ACCESS read-only
```

```
      DESCRIPTION
            "Write access not required."

      GROUP atmSoftPvcVpcMIBGroup
      DESCRIPTION
            "Required if Soft PVPCs are supported."

      OBJECT atmSoftPVpcRetryLimit
      MIN-ACCESS read-only
      DESCRIPTION
            "Write access not required."

      ::= { atmSoftPvcMIBCompliances 1 }


-- units of conformance

atmSoftPvcBaseMIBGroup  OBJECT-GROUP
      OBJECTS {
            atmSoftPvcCallFailuresTrapEnable,
            atmSoftPvcCallFailures,
            atmSoftPvcCurrentlyFailingSoftPVccs,
            atmSoftPvcCurrentlyFailingSoftPVpcs,
            atmSoftPvcNotificationInterval
            }
      STATUS      current
      DESCRIPTION
            "A collection of objects to related to failing
            Soft PVCCs and Soft PVPCs."
      ::= { atmSoftPvcMIBGroups 1 }



atmSoftPvcVccMIBGroup   OBJECT-GROUP
      OBJECTS {
            atmSoftPVccTargetAddress,
            atmSoftPVccTargetSelectType, atmSoftPVccTargetVpi,
            atmSoftPVccTargetVci, atmSoftPVccLastReleaseCause,
            atmSoftPVccLastReleaseDiagnostic,
            atmSoftPVccOperStatus, atmSoftPVccRestart,
            atmSoftPVccRetryInterval,
            atmSoftPVccRetryTimer, atmSoftPVccRetryThreshold,
            atmSoftPVccRetryFailures, atmSoftPVccRetryLimit,
            atmSoftPVccRowStatus
            }
      STATUS      current
      DESCRIPTION
            "A collection of objects managing Soft PVCCs."
      ::= { atmSoftPvcMIBGroups 2 }


atmSoftPvcVpcMIBGroup   OBJECT-GROUP
      OBJECTS     {
            atmSoftPVpcTargetAddress,
            atmSoftPVpcTargetSelectType, atmSoftPVpcTargetVpi,
            atmSoftPVpcLastReleaseCause,
            atmSoftPVpcLastReleaseDiagnostic,
            atmSoftPVpcOperStatus, atmSoftPVpcRestart,
            atmSoftPVpcRetryInterval,
            atmSoftPVpcRetryTimer, atmSoftPVpcRetryThreshold,
            atmSoftPVpcRetryFailures,
            atmSoftPVpcRetryLimit,atmSoftPVpcRowStatus
            }
      STATUS      current
```

```
      DESCRIPTION
            "A collection of objects managing Soft PVPCs."
      ::= { atmSoftPvcMIBGroups 3 }


atmSoftPvcAddressMIBGroup     OBJECT-GROUP
      OBJECTS     {
            atmInterfaceSoftPvcAddressRowStatus
            }
      STATUS      current
      DESCRIPTION
            "A collection of objects managing interfaces addresses for
            Soft PVCCs and Soft PVPCs."
      ::= { atmSoftPvcMIBGroups 4 }


atmCurrentlyFailingSoftPVccMIBGroup OBJECT-GROUP
      OBJECTS     {
            atmCurrentlyFailingSoftPVccTimeStamp
            }
      STATUS      current
      DESCRIPTION
            "A collection of objects for management of currently
            failing Soft PVCCs."
      ::= { atmSoftPvcMIBGroups 5 }


atmCurrentlyFailingSoftPVpcMIBGroup OBJECT-GROUP
      OBJECTS     {
            atmCurrentlyFailingSoftPVpcTimeStamp
            }
      STATUS      current
      DESCRIPTION
            "A collection of objects for management of currently
            failing Soft PVPCs."
      ::= { atmSoftPvcMIBGroups 6 }


END
```

115) Add an Annex I, which contains the Protocol Implementation Conformance Statement (PICS) Proforma as follows.

**Annex I: Protocol Implementation Conformance Statement (PICS) Proforma**

**Table of Contents**

### I.1. Introduction

Prior to the conformance testing and the interoperability testing of IUTs, it is necessary to have the PICS (Protocol Implementation Conformance Statement) documents for both implementations.

This particular PICS deals with the implementation of the Private Network to Network Interface.

#### I.1.1 Scope

This document provides the PICS proforma for the Private Network to Network Interface Specification [1], in compliance with the relevant requirements, and in accordance with the relevant guidelines, given in ISO/IEC 9646-2 [2].

#### I.1.2 Normative References

[1] ATM Forum af-pnni-0055.000, "Private Network-Network Interface Specification Version 1.0 (PNNI 1.0)", Letter Ballot, March, 1996.

[2] ISO/IEC 9646-2 1990, Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 2: Abstract test suite specification. (See also ITU-T Recommendation X.290 (1991)).

#### I.1.3 Definitions

| | |
|---|---|
| AND | Boolean 'and' |
| ATM | Asynchronous Transfer Mode |
| HEC | Header Error Control |
| IUT | Implementation Under Test |
| M | Mandatory |
| N/A | Not applicable |
| NOT | item not supported; absence of item |
| O | Optional |
| O.<n> | Optional, but, if chosen, support is required for either at least one or only one of the options in the group labelled by the same numeral <n> |
| PDU | Protocol Data Unit |
| PNNI | Private Network to Network Interface |
| S.<i> | Supplementary information number i |
| SAR | Segmentation and Reassembly (Sublayer) |
| SDU | Service Data Unit |
| SS | Switching System |
| SUT | System Under Test |
| TC | Transmission Convergence |
| X.<i> | Exceptional information number i |
| ‡ | Indicates PICS question is clarified or modified by the PNNI V1.0 Errata |

#### I.1.4 Conformance Statement

The supplier of a protocol implementation which is claimed to conform to the Private Network to Network Interface required to complete a copy of the PICS proforma provided in Section 3 and is required to provide the information necessary to identify both the supplier and the implementation.

### I.2. Identification of the Implementation

Implementation Under Test (IUT)

Identification

IUT Name: _____

_____

IUT Version: _____

_____

System Under Test

SUT Name: _____

_____

Hardware Configuration: _____

_____

_____

Operating System: _____

Product Supplier

Name: _____

Address: _____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address (optional): _____

Additional Information: _____

Client

Name: _____

Address: _____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address (optional): _____

Additional Information: _____

PICS Contact Person

Name: _____

Address: _____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address (optional): _____

Additional Information: _____

PICS PICS-System Conformance Statement

Provide the relationship of the PICS with the System Conformance Statement for the system:

_____

_____

_____

_____

Identification of the protocol

This PICS proforma applies to the following document:

ATM Forum af-pnni-0055.000, "Private Network-Network Interface Specification Version 1.0 (PNNI v1.0)", Letter Ballot, March 1996

## I.3. PICS Proforma

### I.3.1 Global Statement of Conformance

The implementation described in this PICS meets all of the mandatory requirements of the reference protocol.

___Yes

___No

Note: Answering "No" indicates non-conformance to the specified protocol. Non-supported mandatory capabilities are to be identified in the following tables, with an explanation in the comments section of each table of why the implementation is non-conforming.

### I.3.2 Instructions for Completing the PICS Proforma

The PICS Proforma is a fixed-format questionnaire. Answers to the questionnaire should be provided in the rightmost columns, either by simply indicating a restricted choice (such as Yes or No), or by entering a value or a set of range of values.

Some tables use two columns for status. The first column is the "Conditions for status" column. The second column is the "Status Predicate" column. The "Conditions for status" column indicates which status in the "Status Predicate" is to be used. For example, the table in section 3.3 uses two columns for status. PICS item SS_B is read as: "This item is mandatory for implementations supporting the border node capable switching system with peer support subset (SS_N) (i.e., answered yes to PICS SS_N) and optional for those implementations not implementing border node capable switching system with LGN peer support (NOT SS_N)."

For those tables that only have one status column, "Status Predicate,"the condition for status is assumed to be the minimum implementation (i.e., the IUT supports the minimum function switching system subset, SS_M). For example, the table in section 3.4 uses only one column for status. All PICS questions in this table are applicable for implementations supporting the minimum function switching system subset (i.e., answered yes to PICS SS_M).

A supplier may also provide additional information, categorized as exceptional or supplementary information. This additional information should be provided as items labelled X.<i> for exceptional information, or S.<i> for supplemental information, respectively, for cross reference purposes, where <i> is any unambiguous identification for the item. An exception item should contain the appropriate rational. For example, if an IUT does not implement a feature listed in the "Conditions for status" column, such as in PICS SS_B, where the IUT does not support the border node capable switching system with LGN peer support subset (SS_N), the Support column of the PICS proforma table should be completed as Yes__ No_✓_ X: X.1.

"X.1 This implementation does not support the border node capable switching system with LGN peer support subset."

Note: X.1 is used if this is the first Exceptional Information item.

The supplementary information is not mandatory and the PICS is complete without such information. The presence of optional supplementary or exception information should not affect test execution, and will in no way affect interoperability verification.

Note: Where an implementation is capable of being configured in more than one way, a single PICS may be able to describe all such configurations. However, the supplier has the choice of providing more than one PICS, each covering some subset of the implementation's configuration capabilities, in case this makes for easier or clearer presentation of the information.

### I.3.3 Switching System Subsets (SS)

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| SS_M | Does the IUT support the minimum function switching system subset? | | M | Annex G | Yes_ No_<br>X_ S_ |
| SS_P | Does the IUT support the PGL/LGN switching system subset? | | O | Annex G | Yes_ No_<br>X_ S_ |
| SS_N | Does the IUT support the border node capable switching system with LGN peer support subset? | | O | Annex G | Yes_ No_<br>X_ S_ |
| SS_B | Does the IUT support the border node capable switching system subset? | SS_N<br>NOT SS_N | M<br>O | Annex G | Yes_ No_<br>X_ S_ |

### I.3.4 Optional Features (OPT)

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| OPT_1 | Does the IUT support origination exterior of reachable address advertisements? | | O | Annex G #33 | Yes_ No_ X_ S_ |
| OPT_2 | Does the IUT support alternate routing as a result of crankback? | | O | Annex G #34 | Yes_ No_ X_ S_ |
| OPT_3 | Does the IUT support the Hello protocol over VPCs? | | O | Annex G #35 | Yes_ No_ X_ S_ |
| OPT_4 | Does the IUT support associated signalling? | | O | Annex G #36 | Yes_ No_ X_ S_ |
| OPT_5 | Does the IUT support negotiation of ATM traffic descriptors? | | O | Annex G #37 | Yes_ No_ X_ S_ |
| OPT_6 | Does the IUT support the switched virtual path (VP) service? | | O | Annex G #38 | Yes_ No_ X_ S_ |
| OPT_7 | Does the IUT support Soft PVPC and PVCC? | | O | Annex G #39 | Yes_ No_ X_ S_ |
| OPT_8 | Does the IUT support ABR signalling for point-to-point calls? | | O | Annex G #40 | Yes_ No_ X_ S_ |
| OPT_9 | Does the IUT support the Generic Identifier Transport Information Element? | | O | Annex G #41 | Yes_ No_ X_ S_ |
| OPT_10 | Does the IUT support frame discard? | | O | Annex G #42 | Yes_ No_ X_ S_ |
| OPT_11 | Does the IUT support ILMI over PNNI links? | | O | Annex G #43 | Yes_ No_ X_ S_ |

### I.3.5 General Operational Procedures

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.5.1 | Are the IUT's timers that trigger transmission jittered? | | M | 5.1.1 | Yes_ No_ X_ S_ |
| 3.5.2 | Is a maximum range of fractional variance at most +/- 25% for timers that trigger transmission? | | M | 5.1.1 | Yes_ No_ X_ S_ |
| 3.5.3 | Is a new random fractional variance applied to the time out value each time a timer is reset? | | M | 5.1.1 | Yes_ No_ X_ S_ |
| 3.5.4 | Does the IUT encode all packets, except Hellos, according to the protocol version given by the Version field of the Hello data structure? | | M | 5.1.2 | Yes_ No_ X_ S_ |
| 3.5.5 + | Does the IUT discard without further processing the received packet, if the length in the PNNI packet header exceeds the received data length? | | M | 5.1.3 | Yes_ No_ X_ S_ |
| 3.5.6 + | Does the IUT discard the entire packet if the packet type in the PNNI packet header is not recognized? | | M | 5.1.3 | Yes_ No_ X_ S_ |
| 3.5.7 + | If another parsing error, other than packet type (PICS 3.5.6) or length (PICS 3.5.5), does the IUT ignore the offending element? | | O.1 | 5.1.3 | Yes_ No_ X_ S_ |
| 3.5.8 + | If another parsing error, other than packet type (PICS 3.5.6) or length (PICS 3.5.5), does the IUT ignore the enclosing element? | | O.1 | 5.1.3 | Yes_ No_ X_ S_ |
| 3.5.9 | If another parsing error, other than packet type (PICS 3.5.6) or length (PICS 3.5.5), does the IUT ignore the entire packet? | | O.1 | 5.1.3 | Yes_ No_ X_ S_ |
| 3.5.10 | Does the IUT discard a packet if the packet is received with an unsupported version? | | M | 5.1.3, 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.5.11 | Does the IUT discard the packet if the packet is received with a different version from the expected value, except the Hello packet? | | M | 5.1.3 | Yes_ No_ X_ S_ |

COMMENTS

O.1 - The IUT must support at least one of these capabilities.

### I.3.6 Addressing

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.6.1 | Does the IUT support addressing and identification based on ATM End System addresses (20 bytes)? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| 3.6.2 | Does the IUT's PNNI routing only operate on the first 19 octets of the ATM address? | | M | 5.2.1, 5.2.3 | Yes_ No_ X_ S_ |
| 3.6.3 | Does the IUT treat the entire ATM address, other than the Authority Format Identifier (AFI), as uninterpreted binary data? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| 3.6.4 | Does the IUT use the first (left) p bits as the prefix of an ATM End System address? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| 3.6.5 | Does the IUT use an address prefix in the range 0 - 152 bits? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| 3.6.6 | Does the IUT accept reachable address prefixes in the range 0-152 to summarize portions of the addressing domain? | | M | 5.2.1, 5.3.2 | Yes_ No_ X_ S_ |
| 3.6.7 | Does the IUT make an explicit advertisement (full 152-bit prefix length) for an end system that is attached and has an address that does not fit into one of the node's summary addresses? | | M | 5.2.3 | Yes_ No_ X_ S_ |
| 3.6.8 | Does the IUT (i.e., switching system) always direct calls to a logical node that is advertising the best match (i.e., matching advertisement with the longest prefix) of wide enough scope for the given destination? | | M | 5.2.3, 5.13 | Yes_ No_ X_ S_ |
| 3.6.9 | Does the IUT (i.e., switch) direct calls to addresses for which there is no other match, to systems which advertise a zero length prefix? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| 3.6.10 | Does the IUT (i.e., switching system) assign a unique ATM End System Address to each node it instantiates? | | M | 5.2.2 | Yes_ No_ X_ S_ |

### I.3.7 Identifiers and indicators

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.7.1 | Is the level of a node instantiated in this switching system the same as the level of its containing peer group? | | M | 5.3.1, 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.2 | Is the value of the level indicator greater than or equal to 0 and less than or equal to 104 bits? | | M | 5.3.1, 5.3.2 | Yes_ No_ X_ S_ |
| 3.7.3 | Is the encoding of the PG ID of the format, level indicator (1 octet) and ID information (13 octets)? | | M | 5.3.2 | Yes_ No_ X_ S_ |
| 3.7.4 | Is the value sent in the identifier information field encoded with the 104-n right-most bits set to 0 where n is the level? | | M | 5.3.2 | Yes_ No_ X_ S_ |
| 3.7.5 | Are node IDs of the format: level indicator (1 octet) and opaque value (21 octets)? | | M | 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.6 | Does the IUT treat the entire node ID in received packets, except for the first octet, as uninterpreted binary data? | | M | 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.7 | Does the Node ID remain unchanged while the node is operational? | | M | 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.8 | When ordering for PGL election, is the first byte of the node ID the most significant? | | M | 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.9 | When ordering for SVC RCC establishment, is the first byte of the node ID the most significant? | SS_P or SS_N<br>NOT(SS_P or SS_N) | M<br>N/A | 5.3.3 | Yes_ No_ X_ S_ |
| 3.7.10 | Does the port ID equal 32 bits? | | M | 5.3.4 | Yes_ No_ X_ S_ |
| 3.7.11 | Does the IUT assign specific ports values not equal to 0 or 0xFFFFFFFF? | | M | 5.3.4, 5.14.8, Table 5-27 | Yes_ No_ X_ S_ |
| 3.7.12 | Is the aggregation token 4 octets? | | M | 5.3.5 | Yes_ No_ X_ S_ |
| 3.7.13 | Is the derived Aggregation Token included in the PTSE which describes uplinks? | SS_B or SS_N or SS_P<br>NOT (SS_B or SS_N or SS_P) | M<br>N/A | 5.3.5 | Yes_ No_ X_ S_ |
| 3.7.14 | Is the derived Aggregation Token included in the PTSEs which describe Horizontal links as binding information? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.3.5 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.7.15 | Are two PNNI routing packets considered to be from the same source if and only if they contain identical 22-octet source node IDs? | | M | 5.3.3 | Yes_ No_<br>X_ S_ |
| 3.7.16 | Does each advertised link from a node have a unique port ID within the context of that node? | | M | 5.3.4 | Yes_ No_<br>X_ S_ |
| 3.7.17 | Is a logical link identified by the node ID of either node at the end of the link and the port ID assigned by that node? | | M | 5.3.4 | Yes_ No_<br>X_ S_ |
| 3.7.18 | Are all links between a pair of logical group nodes with the same value of the Aggregation Token advertised as one logical link? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.3.5, 5.10.3.1 | Yes_ No_<br>X_ S_ |
| 3.7.19 | Does a node advertising an uplink induced by an outside link derive the advertised Aggregation token using the algorithm in section 5.10.3.1? | SS_B<br>NOT SS_B | M<br>N/A | 5.3.5, 5.10.3.1 | Yes_ No_<br>X_ S_ |
| 3.7.20 | Is the scope of reachable addresses specified by a level indicator? | | M | 5.3.6 | Yes_ No_<br>X_ S_ |
| 3.7.21 | Does the mapping used to translate between the organizational scope indicated across the UNI and PNNI routing level indicators use the values in Table 5-1 by default? | | M | 5.3.6 | Yes_ No_<br>X_ S_ |
| 3.7.22 | Is the mapping used to translate between the organizational scope indicated across the UNI and PNNI routing level indicators configurable? | | M | 5.3.6 | Yes_ No_<br>X_ S_ |

### I.3.8 Logical Links

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.8.1 | Is no link aggregation carried out by a lowest level node for horizontal links in the same peer group? | | M | 3.2.2 | Yes_ No_ X_ S_ |

### I.3.9 PNNI Routing Control Channels

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.1 | Are PNNI RCC used to exchange PNNI routing packets between nodes that are logically or physically adjacent? | | M | 5.5 | Yes_ No_<br>X_ S_ |
| 3.9.2 | For physical links, does the IUT use the reserved VCC with VPI=0 and VCI=18? | | M | 5.5 | Yes_ No_<br>X_ S_ |
| 3.9.3 | For the exchange of the PNNI routing protocol over a virtual path connection with VPI=V, does the IUT's PNNI routing exchange take place over the PNNI VCC within the VPC that is VPI=V and VCI=18? | OPT_3<br>NOT OPT_3 | M<br>N/A | 5.5 | Yes_ No_<br>X_ S_ |
| 3.9.4 | For the exchange of PNNI routing protocol messages between logical group nodes, is an SVCC established? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5 | Yes_ No_<br>X_ S_ |
| 3.9.5 | Are PNNI protocol packets encapsulated in AAL5-SDUs? | | M | 5.5.1 | Yes_ No_<br>X_ S_ |
| 3.9.6 | Does the RCC use the null SSCS? | | M | 5.5.1 | Yes_ No_<br>X_ S_ |
| 3.9.7 | Does the RCC use message mode? | | M | 5.5.1 | Yes_ No_<br>X_ S_ |
| 3.9.8 | Is one and only one complete PNNI packet encapsulated in one AAL5-SDU? | | M | 5.5.1 | Yes_ No_<br>X_ S_ |
| 3.9.9 | Does the RCC between two lowest level nodes connected via a physical link use the following default traffic descriptor?<br>- service category is nrt-VBR<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0)=RCCSustainableCellRate<br>- MBS(CLP=0)=RCCMaximumBurstSize<br>- Tagging applied<br>- Frame discard allowed | | M | 5.5.2 | Yes_ No_<br>X_ S_ |
| 3.9.10 | If the service category of the of the VPC containing the RCC between two lowest level nodes is CBR, then by default does the RCC use the following default traffic descriptor?<br>- service category is CBR<br>- PCR=RCCPeakCellRate | OPT_3<br>NOT OPT_3 | M<br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.11 | If the service category of the of the VPC containing the RCC between two lowest level nodes is nrt-VBR, and the SCR parameter of the VPC applies to the CLP=0 substream, then by default does the RCC use the following default traffic descriptor?<br>- service category is nrt-VBR<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0)=RCCSustainableCellRate<br>- MBS(CLP=0)=RCCMaximumBurstSize<br>- Tagging applied<br>- Frame discard allowed | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |
| 3.9.12 | If the service category of the of the VPC containing the RCC between two lowest level nodes is nrt-VBR, and the SCR parameter of the VPC applies to the CLP=0+1 substream, then by default does the RCC use the following default traffic descriptor?<br>- service category is nrt-VBR<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0+1)=RCCSustainableCellRate<br>- MBS(CLP=0+1)=RCCMaximumBurstSize<br>- Tagging not applied<br>- Frame discard allowed | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |
| 3.9.13 | If the service category of the of the VPC containing the RCC between two lowest level nodes is rt-VBR and the SCR parameter of the VPC applies to the CLP=0 substream, then by default does the RCC use the following default traffic descriptor?<br>- service category is rt-VBR<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0)=RCCSustainableCellRate<br>- MBS(CLP=0)=RCCMaximumBurstSize<br>- Tagging applied<br>- Frame discard allowed | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |
| 3.9.14 | If the service category of the of the VPC containing the RCC between two lowest level nodes is rt-VBR and the SCR parameter of the VPC applies to the CLP=0+1 substream, then by default does the RCC use the following default traffic descriptor?<br>- service category is rt-VBR<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0+1)=RCCSustainableCellRate<br>- MBS(CLP=0+1)=RCCMaximumBurstSize<br>- Tagging not applied<br>- Frame discard allowed | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.15 | If the service category of the of the VPC containing the RCC between two lowest level nodes is ABR, then by default does the RCC use the following default traffic descriptor?<br>- service category is ABR<br>- PCR=PCR for VPC<br>- MCR=0.005*MCR for VPC | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |
| 3.9.16 | If the service category of the of the VPC containing the RCC between two lowest level nodes is UBR, then by default does the RCC use the following default traffic descriptor?<br>- service category is UBR<br>- PCR=PCR for VPC | OPT_3<br><br>NOT OPT_3 | M<br><br>N/A | 5.5.3 | Yes_ No_<br>X_ S_ |
| 3.9.17 | Does the IUT support the default SETUP parameter values for SVCC-based RCCs? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4 | Yes_ No_<br>X_ S_ |
| 3.9.18 | Does the LGN first request non-real-time VBR service for an SVCC RCC connection? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4, 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.19 | Does the LGN only request real-time VBR after non-real -time VBR is found not to be available for an SVCC RCC connection? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4, 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.20 | Does the LGN only request CBR after real-time VBR is found not to be available for an SVCC RCC connection? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4, 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.21 | Does the LGN only request ABR after CBR is found not to be available for an SVCC RCC connection? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4, 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.22 | Does the LGN only request UBR if no other service category is available for an SVCC RCC connection? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4, 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.23 | For an SVCC-based RCC connection if a required information element is not present, is the call rejected by the LGN? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4 | Yes_ No_<br>X_ S_ |
| 3.9.24 | For an SVCC-based RCC connection is the AAL parameters IE used in the SETUP message? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.4.1.1 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.25 | For an SVCC-based RCC connection is the AAL parameters IE coded with the following values?<br>AAL Type = 5 (for AAL5)<br>Forward Maximum CPCS-SDU Size<br>= 8192 octets<br>Backward Maximum CPCS-SDU Size<br>= 8192 octets<br>SSCS Type = 0 (Null SSCS) | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.1, Table 5-2 | Yes_ No_<br>X_ S_ |
| 3.9.26 | For an SVCC-based RCC connection is the ATM traffic descriptor information element present in the SETUP message? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.2 | Yes_ No_<br>X_ S_ |
| 3.9.27 | When an LGN requests real-time or non-real-time VBR for an SVCC-based RCC, then by default does the SETUP use the following ATM traffic descriptor?:<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- SCR(CLP=0)=RCCSustainableCellRate<br>- MBS(CLP=0)=RCCMaximumBurstSize<br>- Tagging requested<br>- Frame discard allowed | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.2, Table 5-3 | Yes_ No_<br>X_ S_ |
| 3.9.28 | When an LGN requests CBR for an SVCC-based RCC, then by default does the SETUP use the following ATM traffic descriptor?:<br>- PCR(CLP=0+1)=RCCPeakCellRate<br>- Frame discard allowed | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.2, Table 5-3 | Yes_ No_<br>X_ S_ |
| 3.9.29 | When an LGN requests ABR for an SVCC-based RCC, then by default does the SETUP use the following ATM traffic descriptor?:<br>- PCR(CLP=0+1)= line rate<br>- Frame discard allowed | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.2, Table 5-3 | Yes_ No_<br>X_ S_ |
| 3.9.30 | When an LGN requests UBR for an SVCC-based RCC, then by default does the SETUP use the following ATM traffic descriptor?:<br>- PCR(CLP=0+1)= line rate<br>- Best effort indicator<br>- Frame discard allowed | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.2, Table 5-3 | Yes_ No_<br>X_ S_ |
| 3.9.31 | For an SVCC-based RCC connection is the Broadband bearer capability information element used in the SETUP message sent by the calling party? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.3 | Yes_ No_<br>X_ S_ |
| 3.9.32 | For an SVCC-based RCC is the Bearer class in the Broadband bearer capability IE coded as BCOB-X? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.3, Table 5-4 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.33 | For an SVCC-based RCC is the Susceptibility to clipping in the Broadband bearer capability IE coded as 0 (not susceptible to clipping)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.3, Table 5-4 | Yes_ No_<br>X_ S_ |
| 3.9.34 | For an SVCC-based RCC is the User plane connection configuration in the Broadband bearer capability IE coded as 0 for point-to-point? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.3, Table 5-4 | Yes_ No_<br>X_ S_ |
| 3.9.35 | For an SVCC-based RCC connection is the Broadband low layer IE used in the SETUP message? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.4 | Yes_ No_<br>X_ S_ |
| 3.9.36 | For an SVCC-based connection is the Broadband low layer IE encoded using the ATM Forum's allocated 24-bit OUI with PID indicating PNNI RCC as coded in Table 5-5? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.4, Table 5-5 | Yes_ No_<br>X_ S_ |
| 3.9.37 | Is the QoS parameter IE used in the SETUP message sent to request the establishment of the RCC SVCC? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.5 | Yes_ No_<br>X_ S_ |
| 3.9.38 | For an SVCC-based RCC connection is the Extended QoS parameter IE used in the SETUP message sent by the calling party when the service category is nrt-VBR, rt-VBR, or CBR? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.6 | Yes_ No_<br>X_ S_ |
| 3.9.39 | For an SVCC-based RCC connection is the Called party number IE used in the SETUP message sent by the calling party? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.8 | Yes_ No_<br>X_ S_ |
| 3.9.40 | For an SVCC-based RCC connection are all ATM addresses used to setup the RCC, using the ATM Forum UNI ATM End System Address Format of 20 octets? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.8 | Yes_ No_<br>X_ S_ |
| 3.9.41 | For an SVCC-based RCC connection is the Calling party number IE used in the SETUP message sent by the calling party? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.9 | Yes_ No_<br>X_ S_ |
| 3.9.42 | For an SVCC-based RCC connection is the DTL IE included in the SETUP message sent by the calling party? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.1.11 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.43 | For an SVCC-based RCC connection does the called party include the AAL parameters IE in the CONNECT message? | SS_P or SS_N<br>NOT (SS_P or SS_N) | O<br>N/A | 5.5.4.2.1 | Yes_ No_<br>X_ S_ |
| 3.9.44 | For an SVCC-based RCC connection is the Broadband low layer IE included in the CONNECT message? | SS_P or SS_N<br>NOT (SS_P or SS_N) | O<br>N/A | 5.5.4.2.2 | Yes_ No_<br>X_ S_ |
| 3.9.45 | For an SVCC-based RCC connection if the received Broadband low layer IE from the called party is different from the coding requested, is the call released by the calling LGN? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.4.2.2 | Yes_ No_<br>X_ S_ |
| 3.9.46 | For an SVCC-based RCC connection when the PNNI endpoint releases a RCC, is the cause IE encoded as follows?<br>Coding standard = 0<br>IE instruction field = 0<br>Location = 0<br>cause value = 16 | SS_P or SS_N<br>NOT (SS_P or SS_N) | O.1<br>N/A | 5.5.4.3, Table 5-9 | Yes_ No_<br>X_ S_ |
| 3.9.47 | For an SVCC-based RCC connection when the PNNI endpoint releases a RCC, is the cause IE encoded as follows?<br>Coding standard = 0<br>IE instruction field = 0<br>Location = 0<br>cause value = 31 | SS_P or SS_N<br>NOT (SS_P or SS_N) | O.1<br>N/A | 5.5.4.3, Table 5-9 | Yes_ No_<br>X_ S_ |
| 3.9.48 | For an SVCC-based RCC connection when the PNNI endpoint releases a RCC, is the cause IE encoded as follows?<br>Coding standard = 3<br>IE instruction field = 0<br>Location = 0<br>cause value = 53 | SS_P or SS_N<br>NOT (SS_P or SS_N) | O.1<br>N/A | 5.5.4.3, Table 5-9 | Yes_ No_<br>X_ S_ |
| 3.9.49 | If a lowest-level node discovers that it is in the peer group of one of its neighbor's ancestors, is it prepared to communicate over an SVCC? | SS_N<br>NOT SS_N | M<br>N/A | 5.5.5 | Yes_ No_<br>X_ S_ |
| 3.9.50 | If a lowest-level node discovers that it is in the peer group of one of its neighbor's ancestors and its node ID is smaller than its peer, is it prepared to accept an SVCC? | SS_N<br>NOT SS_N | M<br>N/A | 5.5.5 | Yes_ No_<br>X_ S_ |
| 3.9.51 | If a lowest-level node discovers that it is in the peer group of one of its neighbor's ancestors and its node ID is greater than its peer, is it prepared to initiate an SVCC? | SS_N<br>NOT SS_N | M<br>N/A | 5.5.5 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.52 | If a lowest-level node discovers that it is in the peer group of one of its neighbor's ancestors and an SVCC is established, does it use the procedures specified for operation over an SVCC? | SS_N<br><br>NOT SS_N | M<br><br>N/A | 5.5.5 | Yes_ No_<br>X_ S_ |
| 3.9.53 | For an SVCC RCC is the called party address used, the ATM End System address advertised in the uplink that will be crossed by the SVCC? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.6.1 | |
| 3.9.54 | For an SVCC RCC does the DTL in the SETUP message for an SVCC between LGN contain at the bottom of the stack two LGN IDs (LGN initiating the SVCC and LGN that is the target of the SVCC)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.5.6.1 | Yes_ No_<br>X_ S_ |
| 3.9.55 | For an SVCC RCC SETUP message does the Logical Port ID of the last node in all lower DTLs, if any, specify a Logical Port ID that the border node has advertised in an uplink IG to the proper upnode? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.1 | Yes_ No_<br>X_ S_ |
| 3.9.56 | For an SVCC RCC SETUP message is this Logical Port ID not zero? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.1 | Yes_ No_<br>X_ S_ |
| 3.9.57 | When an uplink advertisement containing upnode X has reached ThisLGN and the node X is at a higher level than the level of the peer group of ThisLGN, does this LGN announce an uplink to X by originating an appropriate PTSE in ThisLGN's peer group? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.3 (A.1) | Yes_ No_<br>X_ S_ |
| 3.9.58 | When an uplink advertisement containing upnode X has reached ThisLGN and the node X is at the same level as the level of the peer group of ThisLGN and it has an SVCC open to node X, does it do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.3 (A.2) | Yes_ No_<br>X_ S_ |
| 3.9.59 | When an uplink advertisement containing upnode X has reached ThisLGN and the node X is at the same level as the level of the peer group of ThisLGN, ThisLGN does not have an SVCC open to node X, and ThisLGN has a smaller node ID, then does ThisLGN do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.3 (A.3) | Yes_ No_<br>X_ S_ |
| 3.9.60 | When an uplink advertisement containing upnode X has reached ThisLGN and the node X is at the same or lower level than the level of the peer group of ThisLGN and not in the same common peer group, does it do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.3 (A.4) | Yes_ No_<br>X_ S_ |
| 3.9.61 | When an uplink advertisement containing upnode X has reached ThisLGN and the node X is at the same level and in the same peer group as ThisLGN, ThisLGN does not have an SVCC open to node X, and ThisLGN has a larger node ID, then does ThisLGN establish an SVCC to node X? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.5.6.3 (A.5) | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.9.62 | When ThisLGN determines that it must establish an SVCC to node X, does it wait for an interval of InitialLGNSVCTimeout (jittered) before opening an inter-LGN SVCC to node X? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (A.5) | Yes_ No_<br>X_ S_ |
| 3.9.63 | When ThisLGN's attempt to setup an SVCC-based RCC to node X fails, does it wait for an interval of RetryLGNSVCTimeout (jittered) before retrying the setup, if node X is still the upnode of an existing uplink to the same peer group as ThisLGN and there is still no SVCC open to node X? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (A.5, E.1) | Yes_ No_<br>X_ S_ |
| 3.9.64 | If ThisLGN detects the presences of two or more SVCs to the same neighboring LGN and if ThisLGN's node's ID is numerically larger than the neighboring LGN's node ID, does ThisLGN choose one SVCC to leave open and close all other SVCC(s) with cause number 16? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (B.2) | Yes_ No_<br>X_ S_ |
| 3.9.65 ‡ | If ThisPGL ceases to be PGL, does ThisPGL attempt to flush all PTSEs originated by ThisLGN by transmitting new instances with remaining lifetime ExpiredAge to all neighboring peers in states Exchanging, Loading, or Full? | SS_P<br>NOT SS_ | M<br>N/A | 5.5.6.3 (C.1) | Yes_ No_<br>X_ S_ |
| 3.9.66 | If ThisPGL ceases to be PGL, does ThisLGN clear the SVCCs to all of its neighboring LGNs by sending RELEASE messages with cause IE indicating cause number 53? | SS_P<br>NOT SS_P | M<br>N/A | 5.5.6.3 | Yes_ No_<br>X_ S_ |
| 3.9.67 ‡ | If an existing SVCC to a neighboring LGN is closed and if ThisLGN receives a RELEASE message with cause number 53, is the LinkDown event triggered in the SVCC-based RCC Hello FSM, the BadNeighbor event triggered in all associated LGN horizontal link Hello FSMs, and is RetryLGNSVCTimer started? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (D.1), 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.9.68 ‡ | If an SVCC fails with cause code indicating that the call was cleared due to a signalling error, the upnode X is still being advertised in one or more uplinks, no other SVCC exists to node X, and ThisLGN's node ID is numerically larger than that of upnode X, does ThisLGN immediately attempt to re-establish the SVCC-based RCC? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (D.2) | Yes_ No_<br>X_ S_ |
| 3.9.69 ‡ | If an SVCC fails with cause code that is not #53 and does not indicate a signalling error, the upnode X is still being advertised in one or more uplinks, no other SVCC exists to node X, and ThisLGN's node ID is numerically larger than that of upnode X, does ThisLGN start the RetryLGNSVCTimer with initial value RetryLGNSVCTimeout? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.5.6.3 (D.3) | Yes_ No_<br>X_ S_ |

COMMENTS

O.1 - At least one of these must be supported

### I.3.10 The Hello Protocol

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.1 | Is the Hello protocol running as long as the link is operational? | | M | 3.2.2 | Yes_ No_ X_ S_ |
| 3.10.2 | Does the node include the newest and oldest version supported fields in all packets? | | M | 5.6.1 | Yes_ No_ X_ S_ |
| 3.10.3 | Are all versions in the range advertised supported by the advertiser? | | M | 5.6.1 | Yes_ No_ X_ S_ |
| 3.10.4 | Does each physical link or VPC between two lowest-level neighbor nodes have its own instance of the hello protocol? | | M | 5.6.2.1, 5.7 | Yes_ No_ X_ S_ |
| 3.10.5 | Is there only one instance per neighbor of local information (neighboring peer data structure) and associated neighbor peer state machine for the purposes of database synchronization and flooding of PTSEs? | | M | 5.6.2.1, 5.7 | Yes_ No_ X_ S_ |
| 3.10.6 | Is individual local information (hello data structure) maintained for each of this node's physical ports and for each logical port? | | M | 5.6.2.1.1 | Yes_ No_ X_ S_ |
| 3.10.7 | When the Remote Port ID is not known, is the value set to zero in transmitted Hello packets? | | M | 5.6.2.1.1 | Yes_ No_ X_ S_ |
| 3.10.8 | Is the Inactivity timer set to the value, InactivityFactor times the HelloInterval from the most recent Hello received from the neighbor? | | M | 5.6.2.1.1 | Yes_ No_ X_ S_ |
| 3.10.9 | Are the advertisements for physical links and VPCs suppressed, if the inside link is not in the 2-WayInside state? | | M | 5.6.2.1.2 | Yes_ No_ X_ S_ |
| 3.10.10 | While in the Down state and a Link Up event is generated, is a Hello sent and the Attempt state entered? | | M | Table 5-10 Hp1 | Yes_ No_ X_ S_ |
| 3.10.11 | While in any state other than the Down state and a Link Up event is generated, does the IUT do nothing? | | M | Table 5-10 Hp0 | Yes_ No_ X_ S_ |
| 3.10.12 | While in the Down state and a 1-Way Inside Received event is generated, does the IUT do nothing? | | M | Table 5-10 Hp0 | Yes_ No_ X_ S_ |
| 3.10.13 | While in the Attempt state and a 1-Way Inside Received event is generated, does the IUT start the Inactivity Timer, send a Hello, and enter the 1-Way Inside state? | | M | Table 5-10 Hp2 | Yes_ No_ X_ S_ |
| 3.10.14 | While in the 1-Way Inside state and a 1-Way Inside Received event is generated, is the Inactivity timer restarted? | | M | Table 5-10 Hp12 | Yes_ No_ X_ S_ |
| 3.10.15 | While in the 2-Way Inside state and a 1-Way Inside Received event is generated, is the Inactivity timer restarted, a Hello sent, the Hello Timer restarted, and the 1-Way Inside state entered? | | M | Table 5-10 Hp10 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.16 | While in the Attempt state and a 2-Way Inside Received event is generated, is the Inactivity timer restarted, a Hello sent, the Hello Timer restarted, and 2-Way Inside state entered? | | M | Table 5-10 Hp3 | Yes_ No_ X_ S_ |
| 3.10.17 | While in the 1-Way Inside state and a 2-Way Inside Received event is generated, is the Inactivity Timer restarted and 2-Way Inside state entered? | | M | Table 5-10 Hp4 | Yes_ No_ X_ S_ |
| 3.10.18 | While in the 2-Way Inside state and a 2-Way Inside Received event is generated, is the Inactivity Timer restarted? | | M | Table 5-10 Hp12 | Yes_ No_ X_ S_ |
| 3.10.19 | While in the Down state and a 1-Way Outside Received event is generated, does the IUT do nothing? | | M | Table 5-10 Hp0 | Yes_ No_ X_ S_ |
| 3.10.20 | While in the Attempt state and a 1-Way Outside Received event is generated, does the IUT start the Inactivity Timer, send a Hello with nodal hierarchy information, restart the Hello Timer and enter the 1-Way Outside state? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp5 | Yes_ No_ X_ S_ |
| 3.10.21 | While in the Attempt state and a 1-Way Outside Received event is generated, does the IUT do nothing? | NOT SS_B<br>SS_B | M<br>N/A | Table 5-10 (Note 1) | Yes_ No_ X_ S_ |
| 3.10.22 | While in the 1-Way Outside state and a 1-Way Outside Received event is generated, is the Inactivity Timer Restarted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp12 | Yes_ No_ X_ S_ |
| 3.10.23 | While in the 2-Way Outside state and a 1-Way Outside Received event is generated, is the Inactivity Timer Restarted, the Received ULIA Sequence number and the Received Nodal Hierarchy Sequence number cleared, a Hello sent, the Hello Timer restarted and the 1-Way Outside state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp13 | Yes_ No_ X_ S_ |
| 3.10.24 | While in the Common Outside state and a 1-Way Outside Received event is generated, is the Inactivity Timer Restarted, the Received ULIA Sequence number and the Received Nodal Hierarchy Sequence number cleared, a Hello sent, the Hello Timer restarted and the 1-Way Outside state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp14 | Yes_ No_ X_ S_ |
| 3.10.25 | While in the Attempt state and a 2-Way Outside Received event is generated, does the IUT start the Inactivity Timer, send a Hello with nodal hierarchy information, restart the Hello Timer and enter the 2-Way Outside state? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp5 | Yes_ No_ X_ S_ |
| 3.10.26 | While in the Attempt state and a 2-Way Outside Received event is generated, does the IUT do nothing? | NOT SS_B<br>SS_B | M<br>N/A | Table 5-10 (Note 1) | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.27 | While in the 1-Way Outside state and a 2-Way Outside Received event is generated, is the Inactivity Timer Restarted and the 2-Way Outside state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp12 | Yes_ No_<br>X_ S_ |
| 3.10.28 | While in the 2-Way Outside state and a 2-Way Outside Received event is generated, is the Inactivity Timer restarted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp12 | Yes_ No_<br>X_ S_ |
| 3.10.29 | While in the Attempt state and a Common Hierarchy Received event is generated, is the Inactivity Timer restarted, a Hello sent with a nodal hierarchy list and ULIAs, Hello Timer restarted, and the Common Outside state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp6 | Yes_ No_<br>X_ S_ |
| 3.10.30 | While in the Attempt state and a Common Hierarchy Received event is generated, does the IUT do nothing? | NOT SS_B<br>SS_B | M<br>N/A | Table 5-10 (Note 1) | Yes_ No_<br>X_ S_ |
| 3.10.31 | While in the 1-Way Outside state and a Common Hierarchy Received event is generated, is the Inactivity Timer restarted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp7 | Yes_ No_<br>X_ S_ |
| 3.10.32 | While in the 2-Way Outside state and a Common Hierarchy Received event is generated, is the Inactivity Timer restarted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp7 | Yes_ No_<br>X_ S_ |
| 3.10.33 | While in the Common Outside state and a Common Hierarchy Received event is generated, is the Inactivity Timer restarted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp20 | Yes_ No_<br>X_ S_ |
| 3.10.34 | While in the Common Outside state and a Common Hierarchy Received event is generated and the ULIA sequence number does not match the received ULIA Sequence number in local information (hello data structure), is the new ULIA information re-originated immediately (subject to PTSE holddown)? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp20 | Yes_ No_<br>X_ S_ |
| 3.10.35 | While in the Attempt state and a Hello Mismatch Received event is generated, does the IUT do nothing? | | M | Table 5-10 Hp0 | Yes_ No_<br>X_ S_ |
| 3.10.36 | While in the 1-Way Inside state and a Hello Mismatch Received event is generated, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | | M | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.37 | While in the 2-Way Inside state and a Hello Mismatch Received event is generated, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | | M | Table 5-10 Hp16 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.38 | While in the 1-Way Outside state and a Hello Mismatch Received event is generated, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.39 | While in the 2-Way Outside state and a Hello Mismatch Received event is generated, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.40 | While in the Common Outside state and a Hello Mismatch Received event is generated, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted, the link removed from any PTSE originated by this node and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp17 | Yes_ No_<br>X_ S_ |
| 3.10.41 | While in the Common Outside state and a Hierarchy Mismatch Received is generated, is the Inactivity Timer restarted, local information cleared, link removed from any PTSE originated by this node, and the 2-Way Outside state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | Table 5-10 Hp11 | Yes_ No_<br>X_ S_ |
| 3.10.42 | While in the Attempt state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.43 | While in the 1-Way Inside state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.44 | While in the 2-Way Inside state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.45 | While in the 1-Way Outside state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.46 | While in the 2-Way Outside state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.47 | While in the Common Outside state and the Hello Timer expires, does the IUT send a Hello and restart the Hello Timer? | | M | Table 5-10 Hp15 | Yes_ No_<br>X_ S_ |
| 3.10.48 | While in the 1-Way Inside state and Inactivity Timer expires, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | | M | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.49 | While in the 2-Way Inside state and the Inactivity Timer expires, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | | M | Table 5-10 Hp16 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.50 | While in the 1-Way Outside state and Inactivity Timer expires, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.51 | While in the 2-Way Outside state and Inactivity Timer expires, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp8 | Yes_ No_<br>X_ S_ |
| 3.10.52 | While in the Common Outside state and the Inactivity Timer expires, is the Inactivity Timer disabled, local information cleared, a Hello sent, Hello Timer restarted, the link removed from any PTSE originated by this node and the Attempt state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp17 | Yes_ No_<br>X_ S_ |
| 3.10.53 | While in the Down state and a Link Down event is generated, does the IUT do nothing? | | M | Table 5-10 Hp0 | Yes_ No_<br>X_ S_ |
| 3.10.54 | While in the Attempt state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, and the Down state entered? | | M | Table 5-10 Hp9 | Yes_ No_<br>X_ S_ |
| 3.10.55 | While in the 1-Way Inside state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, and the Down state entered? | | M | Table 5-10 Hp9 | Yes_ No_<br>X_ S_ |
| 3.10.56 | While in the 2-Way Inside state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, and the Down state entered? | | M | Table 5-10 Hp18 | Yes_ No_<br>X_ S_ |
| 3.10.57 | While in the 1-Way Outside state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, and the Down state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp9 | Yes_ No_<br>X_ S_ |
| 3.10.58 | While in the 2-Way Outside state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, and the Down state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp9 | Yes_ No_<br>X_ S_ |
| 3.10.59 | While in the Common Outside state and a Link Down event is generated, is the Inactivity Timer disabled, the Hello Timer disabled, local information cleared, this link is removed from any PTSE originated by this node, and the Down state entered? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br><br>N/A | Table 5-10 Hp19 | Yes_ No_<br>X_ S_ |
| 3.10.60 | When the Version field of the hello data structure is zero, are Hellos encoded using the newest version supported by this implementation? | | M | 5.6.2.2 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.61 | When the Version field of the hello data structure is not zero, are Hellos encoded using the recorded version? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.62 | When in any state other than Down, does the IUT transmit Hellos periodically (i.e., every HelloInterval seconds)? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.63 | Is a Hello sent upon every state change subject to the HoldDown timer, except:<br>1-Way Inside to 2-Way Inside,<br>1-Way Outside to 2-Way Outside,<br>1-Way Outside to Common Outside,<br>2-Way Outside to Common Outside,<br>and Common Outside to 2-Way Outside? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.64 | Is a Hello sent on an outside link when a significant change occurs in the ULIA for this outside link, subject to the HoldDown timer? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.65 | Is a Hello sent on an outside link when a change occurs in the node's nodal hierarchy list, subject to the HoldDown timer? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.66 | Is a Hello sent on an outside link when a change occurs in the link aggregation token for this outside link, subject to the HoldDown timer? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.67 | When multiple event triggered Hellos are deferred because of the HoldDown timer, does the IUT send only one hello which contains the most current information for all IGs when the HoldDown timer expires? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.68 | Is the Hello Timer restarted after an event-triggered Hello is transmitted? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.69 | When in the Attempt state, do the Hellos have their remote node ID and remote port ID fields set to zero? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.70 | When in any state other than Down or Attempt state, do the Hellos have their remote node ID and remote port ID fields set to the neighbor node's node ID and port ID as stored locally (i.e. in the hello data structure)? | | M | 5.6.2.2 | Yes_ No_ X_ S_ |
| 3.10.71 | Is the nodal hierarchy list included in all Hellos sent while in any of the states:<br>1-Way Outside,<br>2-Way Outside, or<br>Common Outside and not in any other state? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.72 | Whenever a change occurs in the number or content of known higher levels, as expressed in the nodal hierarchy list, is the sequence number of the nodal hierarchy list incremented and an event triggered Hello sent, subject to Holddown? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_<br>X_ S_ |
| 3.10.73 | Whenever a change occurs in the node ID, peer group ID or ATM address at the lowest level, is the sequence number of the nodal hierarchy list incremented and an event triggered Hello sent, subject to Holddown? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_<br>X_ S_ |
| 3.10.74 | Is the sequence number of the first instance of the nodal hierarchy list sent to any neighbor greater than zero? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_<br>X_ S_ |
| 3.10.75 | Are all the known higher levels included in the nodal hierarchy list of each Hello transmitted? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_<br>X_ S_ |
| 3.10.76 | If no higher level is known, is an empty nodal hierarchy list included in the Hello? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2 | Yes_ No_<br>X_ S_ |
| 3.10.77 | Is the ULIA information group included in all Hellos while in the states:<br>1-Way Outside, 2-Way Outside, or Common Outside? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2,<br>5.6.2.2.1 | Yes_ No_<br>X_ S_ |
| 3.10.78 | Is the transmitted ULIA sequence number only incremented in a Hello packet, when a change to the transmitted ULIA contents is significant? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2.1 | Yes_ No_<br>X_ S_ |
| 3.10.79 | Does any change in the received ULIA sequence number in a Hello packet, trigger an update to the corresponding uplink PTSE for the border node? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2.1,<br>5.6.2.3.1 | Yes_ No_<br>X_ S_ |
| 3.10.80 | If no significant change occurred since the last transmitted ULIA, does the Hellos continue to contain the previous sequence number? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2.1 | Yes_ No_<br>X_ S_ |
| 3.10.81 | When a significant change to some transmitted ULIA IG has occurred, are the most recent link state information for all transmitted ULIA IGs inserted in the transmitted Hello? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.2.1 | Yes_ No_<br>X_ S_ |
| 3.10.82 | If a Hello has a top level unknown TLV with the mandatory tag bit set, is the Hello packet discarded? | | M | 5.6.2.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.10.83 | If the hello interval in the Hello packet is set to zero, is the Hello packet discarded? | | M | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.84 | If the port ID in the Hello packet is set to zero, is the Hello packet discarded? | | M | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.85 | If the remote node ID, remote PG ID and remote port ID in the local information (hello data structure) are not yet set, are they set to the received Hello's originating node ID, peer group ID, and port ID? | | M | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.86 | If the version field in the local information (hello link structure) is zero, is the lower of the received newest version supported and the local newest version supported calculated and recorded as the Version number? | | M | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.87 | If a new instance of the nodal hierarchy list, is received, is the nodal hierarchy list searched for the lowest level peer group that both nodes have in common? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.88 | Are the neighbor's node ID, PG ID, and ATM End System address, considered to be the lowest component of the nodal hierarchy list? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.3 | Yes_ No_ X_ S_ |
| 3.10.89 | When a border node receives a Hello packet with a different ULIA sequence number than last received from a neighboring border node on an outside link, does it (re-)originate the corresponding uplink PTSE that causes the derived aggregation token to change? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.3.1, 5.8.5.2.4, 5.10.3.1 | Yes_ No_ X_ S_ |
| 3.10.90 | Is the most recently received ULIA used to compose the uplink advertisement? | SS_B or SS_N<br>NOT (SS_B or SS_N) | M<br>N/A | 5.6.2.3.1 | Yes_ No_ X_ S_ |

### I.3.11 SVCC-Based RCC Hello Protocol

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.11.1 | When using the SVCC-Based RCC Hello Protocol, is the port ID field in the transmitted Hello message set to 0xFFFFFFFF? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.2 | If the received port ID is different from 0xFFFFFFFF, is the event HelloMismatchReceived triggered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.3 | If the received PG ID is different from this node's PG ID, is the event HelloMismatchReceived triggered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.4 | If the node ID in the received Hello is not equal to the value in the corresponding uplink PTSE, is the event HelloMismatchReceived triggered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.5 | If the called party LGN receives a SETUP message from a node it does not recognize as a neighbor, does it accept the call? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.6 | If the called party LGN receives a SETUP message from a node it does not recognize as a neighbor and is not at the lowest level, does it ignore any Hellos, until it receives an uplink PTSE indicating that node as a neighbor? | SS_P<br>NOT SS_P | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.7 | When a HelloMismatchReceived, does the called party return to the Attempt state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.8 ‡ | When a HelloMismatchReceived, does the calling party release the SVCC with cause #16 and start the RetryLGNSVCTimer? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.9 ‡ | When a HelloMismatchReceived, does the calling party release the SVCC with cause #16 and start the RetryLGNSVCTimer and is this situation logged and trapped to network management? | SS_P or SS_N<br>NOT (SS_P or SS_N) | O<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.10 | Is failure of the SVCC when indicated from lower levels, treated as a LinkDown event and attempt to reestablish? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.11.11 | If the IUT has a higher node ID than that of the neighboring peer, does it attempt to establish the SVC? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.12 ‡ | At the calling node, is the SVCIntegrityTimer set when the SVCC becomes active? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.13 ‡ | At the calling node, is the SVCIntegrityTimer set when the state machine enters the Attempt state or the OneWay state and the timer is not running? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2, 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.14 | At the calling node, is the SVCIntegrityTimer disabled in the TwoWay and Down states? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.15 | Does the expiration of the SVCIntegrityTimer cause a return to the Down state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.16 | At the calling node, upon entering the Down state, is the SVCC released and re-established procedures followed? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2, 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.17 | Is the SVCIntegrityTimer started with the value SVCCallingIntegrityTime including jitter? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.18 | At the called node, is the SVCIntegrityTimer set when a SETUP message is received? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.19 | At the called node, is the SVCIntegrityTimer set when the state machine enters the Attempt or OneWay states and the timer is not running? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2, 5.6.3.1 | Yes_ No_<br>X_ S_ |
| 3.11.20 | At the called node, is the SVCIntegrityTimer disabled in the TwoWay state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2 | Yes_ No_<br>X_ S_ |
| 3.11.21 | At the called node, upon entering the Down state, is the SVCC released? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.1.2, 5.6.3.1 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.11.22 ‡ | If all PTSEs describing uplinks to the LGN neighbor have been deleted, does this node return to the Down State and start SVCIntegrityTimer? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.6.3.1.3 | Yes_ No_<br>X_ S_ |

### I.3.12 LGN Horizontal Link Hello Protocol

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.12.1 | Is the LGN horizontal link extension IG present in all Hellos transmitted to the neighboring peer LGN? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.2 | Does the horizontal link extension IG contain an entry for each horizontal link to the neighboring peer node that is not in the Down state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.3 | For each horizontal link, are the aggregation token, local port ID and remote port ID included? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.4 | Are the LGN horizontal links IG processed only in 2-Way Inside and the corresponding neighboring peer state machine is in Full state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.5 | Is an LGN horizontal link advertised if and only if the LGN horizontal link hello state is 2-Way? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2,<br>5.6.3.2.2 | Yes_ No_<br>X_ S_ |
| 3.12.6 | When an uplink PTSE arrives with a new aggregation token value, is a logical port assigned and a state machine created in the Down state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.7 | When an uplink PTSE arrives with a new aggregation token value, is the AddInducingUplink event triggered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.8 | When an uplink PTSE arrives with a new aggregation token value and after the AddInducingUplink event is triggered, does the state machine transition to the Attempt State? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.9 | Does the IUT after the event DropLastInducingUplink remove the aggregation token value and associated port ID from the Horizontal Link Extension information group? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.10 | Does the IUT ignore a received aggregation token value in an LGN horizontal link extension IG when there is no corresponding local information (i.e., no state machine)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.12.11 | Does the absence of an aggregation token in the LGN Horizontal Link extension IG force the state machine associated with that aggregation token to the Attempt state? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.12 | Upon the loss of an SVCC-based RCC for reasons other than RELEASE with cause 53, does each link remain up until the expiration of the Horizontal Link Inactivity timer or the last uplink is removed? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.13 | If the SVCC is released with cause 53, is the event BadNeighbor triggered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2 | Yes_ No_<br>X_ S_ |
| 3.12.14 | Is local information (LGN horizontal link hello data structure) maintained for each horizontal link to a neighboring node? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2.1 | Yes_ No_<br>X_ S_ |
| 3.12.15 | When the remote port ID is not known, is it set to zero in the Horizontal Link Extension IG? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.6.3.2.1 | Yes_ No_<br>X_ S_ |
| 3.12.16 | When in the Down state and the event AddInducing-Uplink is received, this inducing uplink added to the Inducing Uplink list and the Attempt state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp10 | Yes_ No_<br>X_ S_ |
| 3.12.17 | When in the Attempt state and the event AddInducing-Uplink is received, this inducing uplink added to the Inducing Uplink list in the local information (LGN horizontal link hello data structure)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp11 | Yes_ No_<br>X_ S_ |
| 3.12.18 | When in the 1-Way state and the event AddInducing-Uplink is received, this inducing uplink added to the Inducing Uplink list in the local information (LGN horizontal link hello data structure)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp11 | Yes_ No_<br>X_ S_ |
| 3.12.19 | When in the 2-Way state and the event AddInducing-Uplink is received, this inducing uplink added to the Inducing Uplink list in the local information (LGN horizontal link hello data structure)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp12 | Yes_ No_<br>X_ S_ |
| 3.12.20 | When in the 2-Way state and the event AddInducing-Uplink is received, which causes a significant change in the topology state parameters, is a new instance of the horizontal link PTSE originated? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp12 | Yes_ No_<br>X_ S_ |
| 3.12.21 | When in the Down state and the event 1-Way Received is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.12.22 | When in the Down state and the event 2-Way Received is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.23 | When in the Down state and the event HelloMismatch Received is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.24 | When in the Down state and the HorizontalLink Inactivity Timer expires, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.25 | When in the Down state and the event BadNeighbor is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.26 | When in the Attempt state and the event 1-WayReceived is received, is the Port ID listed in the entry for the Aggregation Token saved in local information (LGN horizontal link hello data structure) and the 1-Way state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp1 | Yes_ No_<br>X_ S_ |
| 3.12.27 | When in the Attempt state and the event 2-WayReceived is received, is the Port ID listed in the entry for the Aggregation Token saved in local information (LGN horizontal link hello data structure), an advertisement for this horizontal link included in a new instance of a horizontal link PTSE and the 2-Way state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp2 | Yes_ No_<br>X_ S_ |
| 3.12.28 | When in the Attempt state and the event HelloMismatch Received is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.29 | When in the Attempt state and the HorizontalLink Inactivity Timer expires, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.30 | When in the Attempt state and the event BadNeighbor is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.31 | When in the Attempt state and the event DropInducing-Uplink is received, is the inducing uplink deleted from the local information (LGN horizontal link hello data structure)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | Table 5-11 Hlhp13 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.12.32 | When in the Attempt state and the event DropLastInducing-Uplink is received, is the inducing uplink deleted from the local information (LGN horizontal link hello data structure) and the Down state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp13 | Yes_ No_<br>X_ S_ |
| 3.12.33 | When in the 1-Way state and the event 1-WayReceived is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |
| 3.12.34 | When in the 1-Way state and the event 2-WayReceived is received, is a new instance of a horizontal link PTSE originated by this node including an advertisement of this horizontal link and is the 2-Way state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp3 | Yes_ No_<br>X_ S_ |
| 3.12.35 | When in the 1-Way state and the event HelloMismatch Received is received, is the local information for the remote Port ID cleared and the Attempt state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp4 | Yes_ No_<br>X_ S_ |
| 3.12.36 | When in the 1-Way state and the HorizontalLink Inactivity Timer expires, is the local information for the remote Port ID cleared and the Attempt state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp4 | Yes_ No_<br>X_ S_ |
| 3.12.37 | When in the 1-Way state and the event BadNeighbor is received, is the local information for the remote Port ID cleared and the Attempt state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp4 | Yes_ No_<br>X_ S_ |
| 3.12.38 | When in the 1-Way state and the event DropInducingUplink is received, is the inducing uplink deleted from the local information (LGN horizontal link hello data structure)? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp13 | Yes_ No_<br>X_ S_ |
| 3.12.39 | When in the 1-Way state and the event DropLastInducing-Uplink is received, is the local information for the remote port ID cleared, the inducing uplink deleted from the local information (LGN horizontal link hello data structure), and the Down state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp16 | Yes_ No_<br>X_ S_ |
| 3.12.40 | When in the 2-Way state and the event 1-WayReceived is received, is the horizontal link removed from the PTSE originated by this node and the 1-Way state entered? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp6 | Yes_ No_<br>X_ S_ |
| 3.12.41 | When in the 2-Way state and the event 2-WayReceived is received, does the IUT do nothing? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | Table 5-11 Hlhp0 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.12.42 | When in the 2-Way state and the event HelloMismatch Received is received, is the local information for the remote Port ID cleared, the horizontal link removed from the PTSE originated by this node and the Attempt state entered? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp5 | Yes_ No_ X_ S_ |
| 3.12.43 | When in the 2-Way state and the event HorizontalLink InactivityTimerExpired is received, is the local information for the remote Port ID cleared, the horizontal link removed from the PTSE originated by this node and the Attempt state entered? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp5 | Yes_ No_ X_ S_ |
| 3.12.44 | When in the 2-Way state and the event BadNeighbor is received, is the local information for the remote Port ID cleared, the horizontal link removed from the PTSE originated by this node and the Attempt state entered? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp5 | Yes_ No_ X_ S_ |
| 3.12.45 | When in the 2-Way state and the event DropInducingUplink is received, is the inducing uplink deleted from the local information (LGN horizontal link hello data structure) and the 2-Way state entered? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp14 | Yes_ No_ X_ S_ |
| 3.12.46 | When in the 2-Way state and the event DropInducingUplink is received and the deletion of this inducing uplink causes a significant change in the topology state parameters is a new instance of the horizontal link PTSE originated? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp14 | Yes_ No_ X_ S_ |
| 3.12.47 | When in the 2-Way state and the event DropLastInducing Uplink is received, is the remote Port ID cleared and the inducing uplink deleted from the local information (horizontal link hello data structure), originate a PTSE which does not include this horizontal link and the Down state entered? | SS_P or SS_N NOT (SS_P or SS_N) | M N/A | Table 5-11 Hlhp15 | Yes_ No_ X_ S_ |

### I.3.13 Overall Procedures

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.13.1 | Does a single Hello timer exist per SVCC-based RCC? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.6.3.3 | Yes_ No_<br>X_ S_ |
| 3.13.2 | Is the Hello timer reset any time a Hello is sent? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.6.3.3 | Yes_ No_<br>X_ S_ |
| 3.13.3 | Is the Horizontal Link Inactivity Timer reset each time an LGN Horizontal Link Extension IG is processed? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.6.3.3 | |
| 3.13.4 ‡ | Is an event-triggered Hello sent upon:<br>- every state change in the SVCC-based RCC Hello state machine except for 1-Way Inside to 2-Way Inside, and<br>- every state change in every LGN Horizontal Link Hello state machine associated with the neighboring peer LGN, except for 1-Way to 2-Way? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br><br>N/A | 5.6.3.3 | Yes_ No_<br>X_ S_ |

### I.3.14 Database Synchronization

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.1 | When a node first learns about the existence of a neighboring peer node in the same PG, does it initiate a database exchange process? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.2 | Does the IUT have at most one outstanding Database Summary packet at any one time per neighbor? | | M | 5.7, 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.3 | Does the IUT have at most one outstanding PTSERequest packet during a Request Rxmt Interval per neighbor? | | M | 5.7, 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.4 | When a node receives a Database Summary packet, does it examine its topology database for the presence of each PTSE described in the packet and if the PTSE is not in the topology database is the PTSE requested from a peer? | | M | 5.7, 3.2.3.4 | Yes_ No_ X_ S_ |
| 3.14.5 | If the PTSE is not in the topology database is the PTSE requested from another peer whose database summary indicates that it has the most recent version of the PTSE? | | O | 5.7 | Yes_ No_ X_ S_ |
| 3.14.6 | When a node receives a Database Summary packet, does it examine its topology database for the presence of each PTSE described in the packet and if the PTSE is more recent than the one in the topology database, is the PTSE requested from a peer? | | M | 5.7, 3.2.3.4 | Yes_ No_ X_ S_ |
| 3.14.7 | If the PTSE is more recent than the one in the topology database, is the PTSE requested from another peer whose database summary indicates that it has the most recent version of the PTSE? | | O | 5.7 | Yes_ No_ X_ S_ |
| 3.14.8 | When a link reaches the Hello state 2-Way Inside, is the event AddPort triggered? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.9 | When a link falls out of the Hello state 2-Way Inside, is the event DropPort triggered? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.10 | Does the database exchange commence when AddPort is first triggered? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.11 | When the DropPort event for the last link occurs, is the DropPortLast event generated? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.12 | Is all state information for the neighboring peer cleared, when the DropPortLast event occurs? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.13 | Are links between lowest-level neighboring peers only advertised in PTSEs when the neighboring peer state machine is in Full state? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.14 | When the Hello state of the RCC reaches 2-WayInside, is AddPort triggered and database exchange commenced? | | M | 5.7 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.15 | When the Hello state of the RCC falls out of 2-WayInside, is the DropPort event triggered and does the state machine go to NPDown state? | | M | 5.7 | Yes_ No_ X_ S_ |
| 3.14.16 | If this node is master, does it send the first Database Summary packet in the exchange? | | M | 5.7.1 | Yes_ No_ X_ S_ |
| 3.14.17 | Is the DX Rxmt Timer stopped when the node receives a correct Database Summary packet? | | M | 5.7.1 | Yes_ No_ X_ S_ |
| 3.14.18 | Is the Request Rxmt Timer stopped when all of the PTSEs requested in the last PTSERequest packet have been received? | | M | 5.7.1 | Yes_ No_ X_ S_ |
| 3.14.19 | Does the event DSMismatch force the Negotiating state? | | M | 5.7.2 | Yes_ No_ X_ S_ |
| 3.14.20 | Does the event BadPTSERequest force the Negotiating state? | | M | 5.7.2 | Yes_ No_ X_ S_ |
| 3.14.21 | Does the event DropPort cause no state change, except when it is the last port to this neighbor (i.e., DropPortLast)? | | M | 5.7.2 | Yes_ No_ X_ S_ |
| 3.14.22 | Does the event DropPortLast force the NPDown state? | | M | 5.7.2 | Yes_ No_ X_ S_ |
| 3.14.23 | When in the NPDown state and an AddPort event occurs, does the node increment the DS sequence number, start sending Database Summary packets and enter the Negotiating state? | | M | Table 5-12 Ds1 | Yes_ No_ X_ S_ |
| 3.14.24 | When in the NPDown state and an AddPort event occurs and this is the first time that an adjacency has been attempted, is the DS sequence number assigned a unique value? | | M | Table 5-12 Ds1 | Yes_ No_ X_ S_ |
| 3.14.25 | When in the NPDown state and an AddPort event occurs and this is a lowest-level node, which is connected by physical links or VPCs, is the port ID added to the Port ID list on the local information (neighboring peer data structure)? | | M | Table 5-12 Ds1 | Yes_ No_ X_ S_ |
| 3.14.26 | When in the Negotiating state and an AddPort event occurs and this is a lowest-level neighboring peer, which is connected by physical links or VPC, is the port ID added to the Port ID list as local information (neighboring peer data structure)? | | M | Table 5-12 Ds7 | Yes_ No_ X_ S_ |
| 3.14.27 | When in the Exchanging state and an AddPort event occurs and this is a lowest-level neighboring peer, which is connected by physical links or VPC, is the port ID added to the Port ID list as local information (neighboring peer data structure)? | | M | Table 5-12 Ds7 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.28 | When in the Loading state and an AddPort event occurs and this is a lowest-level neighboring peer, which is connected by physical links or VPC, is the port ID added to the Port ID list as local information (neighboring peer data structure)? | | M | Table 5-12 Ds7 | Yes_ No_ X_ S_ |
| 3.14.29 | When in the Full state and an AddPort event occurs and this is a lowest-level neighboring peer, which is connected by physical links or VPC, is the port ID added to the Port ID list as local information (neighboring peer data structure) and a new instance of a PTSE to be originated? | | M | Table 5-12 Ds8 | Yes_ No_ X_ S_ |
| 3.14.30 | When in the Negotiating state and the NegotiationDone event occurs, does the IUT begin sending Database Summary packets with information and enter the Exchanging state? | | M | Table 5-12 Ds2 | Yes_ No_ X_ S_ |
| 3.14.31 | When in the Exchanging state and the ExchangeDone event occurs, is the DS Rxmt Timer stopped, start sending PTSE Request packets, and enter the Loading state? | | M | Table 5-12 Ds3 | Yes_ No_ X_ S_ |
| 3.14.32 | When in the Exchanging state and the SynchDone event occurs, is the DS Rxmt Timer stopped and the Full state entered? | | M | Table 5-12 Ds4 | Yes_ No_ X_ S_ |
| 3.14.33 | When in the Loading state and the LoadingDone event occurs, is the DS Rxmt Timer stopped and the Full state entered? | | M | Table 5-12 Ds4 | Yes_ No_ X_ S_ |
| 3.14.34 | When in the Exchanging state and the event DS Mismatch is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds5 | Yes_ No_ X_ S_ |
| 3.14.35 | When in the Loading state and the event DS Mismatch is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds5 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.36 | When in the Full state and the event DS Mismatch is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds6 | Yes_ No_ X_ S_ |
| 3.14.37 | When in the Full state and the event DS Mismatch is received and there is a PTSE advertising links to that neighbor, is that PTSE modified to remove the links and the PTSE re-originated or flushed? | | M | Table 5-12 Ds6 | Yes_ No_ X_ S_ |
| 3.14.38 | When in the Exchanging state and the event BadPTSE Request is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds5 | Yes_ No_ X_ S_ |
| 3.14.39 | When in the Loading state and the event BadPTSE Request is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds5 | Yes_ No_ X_ S_ |
| 3.14.40 | When in the Full state and the event BadPTSE Request is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; is the DS sequence number incremented; is a Database Summary packet sent; is the DS Rxmt Timer started and the Negotiating state entered? | | M | Table 5-12 Ds6 | Yes_ No_ X_ S_ |
| 3.14.41 | When in the Full state and the event BadPTSE Request is received and there is a PTSE advertising links to that neighbor, is that PTSE modified to remove the links and the PTSE re-originated or flushed? | | M | Table 5-12 Ds6 | Yes_ No_ X_ S_ |
| 3.14.42 | When in the Negotiating state and the event DropPort is received, is the link removed from the local information (neighboring peer data structure)? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.43 | When in the Negotiating state and the event DropPort is received and if this was the last active link to this neighbor, is the event DropPortLast generated? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.44 | When in the Exchanging state and the event DropPort is received, is the link removed from the local information (neighboring peer data structure)? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.45 | When in the Exchanging state and the event DropPort is received and if this was the last active link to this neighbor, is the event DropPortLast generated? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.46 | When in the Loading state and the event DropPort is received, is the link removed from the local information (neighboring peer data structure)? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.47 | When in the Loading state and the event DropPort is received and if this was the last active link to this neighbor, is the event DropPortLast generated? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.48 | When in the Full state and the event DropPort is received, is the link removed from the local information (neighboring peer data structure)? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.49 | When in the Full state and the event DropPort is received and if there is a PTSE advertising that link, is a new instance of the affected PTSE originated? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.50 | When in the Full state and the event DropPort is received and if this was the last active link to this neighbor, is the event DropPortLast generated? | | M | Table 5-12 Ds9 | Yes_ No_ X_ S_ |
| 3.14.51 | When in any state other than NPDown and the event DropPortLast is received, are timers: Peer Delayed Ack Timer, DS Rxmt Timer, and Request Rxmt Timer stopped, if running; are the lists: Peer Retransmission, Peer Delayed Acks, and PTSE Request, and related timers cleared; and is the NPDown state entered? | | M | Table 5-12 Ds10 | Yes_ No_ X_ S_ |
| 3.14.52 | When in the Negotiating state, does the node send empty Database Summary packets with the I, M and MS bits set? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.53 | Is the DS Rxmt Timer restarted after sending a Database Summary packet? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.54 | Are the Database Summary packets that are not acknowledged retransmitted every DSRxmtInterval seconds? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.55 | In Exchanging when the node is master, are Database Summary packets sent when the slave acknowledges the previous Database Summary packet? | | M | 5.7.5 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.56 ‡ | In Exchanging when the node is master and this packet includes the last portions of the database summary to be sent to the slave, is the more (M) bit set to zero? | | O | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.57 ‡ | In Exchanging when the node is master and all of the database summary has already been sent to the slave, is the more (M) bit in the Database Summary packet set to zero? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.58 | In Exchanging when the node is master and this packet does not include the last portions of the database summary to be sent to the slave, is the more (M) bit set to one? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.59 | In Exchanging when the node is slave, are Database Summary packets sent only in response to Database Summary packets received? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.60 | In Exchanging when the node is slave and all of the database summary has already been previously sent to the master, is the more (M) bit in the Database Summary packet set to zero? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.61 | In Exchanging when the node is slave and this packet contains at least one item of the database summary to be sent to the master, is the more (M) bit set to one? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.62 | When the node is slave and in state Loading, is the last Database Summary packet (with I, M and MS bits set to zero) resent in response to duplicate Database Summary packets received from the master? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.63 | When the node is slave and in state Full, is the last Database Summary packet (with I, M and MS bits set to zero) resent in response to duplicate Database Summary packets received from the master? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.64 | When the node is slave and in state Loading, is the last packet sent empty with I, M and MS bits set to zero and the DS sequence number set to the value in the neighboring peer data structure? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.65 | When the node is slave and in state Full, is the last packet sent empty with I, M and MS bits set to zero and the DS sequence number set to the value in the neighboring peer data structure? | | M | 5.7.5 | Yes_ No_ X_ S_ |
| 3.14.66 | Is a Database Summary packet ignored if the neighboring peer state is NPDown? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.67 ++ | While in state Negotiating, if a packet is received that has I, M and MS are one, is empty, and the neighboring peer's node ID is larger than this node's own node ID, is the event NegotiationDone triggered? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.68 ++ | After generating the NegotiationDone (as in PICS 3.14.67), does the node stop the DS Rxmt Timer? | | M | 5.7.6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.69 ++ | After generating the NegotiationDone (as in PICS 3.14.67), does the node set the master/slave bit to slave (i.e., zero)? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.70 ++ | After generating the NegotiationDone (as in PICS 3.14.67), does the node set the initialize bit to zero? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.71 ++ | After generating the NegotiationDone (as in PICS 3.14.67), does the node set the DS sequence number to that specified by the master? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.72 ++ | After generating the NegotiationDone (as in PICS 3.14.67), does the node send a Database Summary packet to the master including the first portion of this node's database summary? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.73 +++ | While in state Negotiating, if a packet is received that has I and MS are zero, the packet's DS sequence number equals this node's own DS sequence number, and the neighboring peer's node ID is smaller than this node's own node ID, is the event NegotiationDone triggered? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.74 +++ | When master after generating the NegotiationDone (as in PICS 3.14.73), does the node stop the DS Rxmt Timer? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.75 +++ | When master after generating the NegotiationDone (as in PICS 3.14.73), is the contents of the received Database Summary packet processed? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.76 +++ | When master after generating the NegotiationDone (as in PICS 3.14.73), does the node increment the DS sequence number by one? | | M | 5.7.6, 5.7.1 | Yes_ No_ X_ S_ |
| 3.14.77 +++ | When master after generating the NegotiationDone (as in PICS 3.14.73), does the node set the initialize bit to zero? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.78 +++ | When master after generating the NegotiationDone (as in PICS 3.14.73), does the node send a Database Summary packet to the slave including the first portion of this node's database summary? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.79 | After sending a Database Summary packet to the slave, does the node restart the DS Rxmt Timer? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.80 ++ +++ | If the conditions of PICS 3.14.67 or PICS 3.14.73 are not met, does the IUT ignore the packet? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.81 | While in Exchanging, if the state of the MS bit is inconsistent with the master/slave state of the connection, is the event DSMismatch generated and processing of the packet stopped? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.82 | While in Exchanging, if I is set, is the event DSMismatch generated and processing of the packet stopped? | | M | 5.7.6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.83 +++ | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number, is the packet accepted? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.84 | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number, is the DS Rxmt Timer stopped? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.85 | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number, is the DS sequence number incremented by one? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.86 | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number and the M bit is set to zero and this node has already sent its entire database and the PTSE Request List is not empty, is the event ExchangeDone generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.87 | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number and the M bit is set to zero and this node has already sent its entire database and the PTSE Request List is empty, is the event SynchDone generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.88 | While in Exchanging and the node is master, if a packet is received that has the DS sequence number equal to this node's own DS sequence number and the M bit is set to zero and this node has not sent its entire database, is a new Database Summary packet sent and the DS Rxmt Timer restarted? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.89 ‡ | While in Exchanging and this node is master and a duplicate Database Summary packet is received, is the processing of this packet stopped? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.90 | While in Exchanging and this node is slave and the packet's DS sequence number is one more than this node's DS sequence number, is the packet accepted? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.91 | While in Exchanging and this node is slave and the packet's DS sequence number is one more than this node's DS sequence number, is the DS sequence number set to the DS sequence number appearing in the received packet? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.92 | While in Exchanging and this node is slave and the packet's DS sequence number is one more than this node's DS sequence number, is a Database Summary packet sent to the master? | | M | 5.7.6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.93 | While in Exchanging and the node is slave, if a packet is received that has the DS sequence number one more than this node's own DS sequence number and the just transmitted Database Summary packet had the M bit is set to zero and the PTSE Request List is not empty, is the event ExchangeDone generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.94 | While in Exchanging and the node is slave, if a packet is received that has the DS sequence number one more than this node's own DS sequence number and the just transmitted Database Summary packet had the M bit is set to zero and the PTSE Request List is empty, is the event SynchDone generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.95 ‡ +++ | While in Exchanging and this node is slave and a duplicate Database Summary packet is received , is the last Database Summary packet sent to the master retransmitted and processing of the received Database Summary packet stopped? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.96 +++ | While in Exchanging and none of the PICS items 3.14.83 through 3.14.95 conditions are met, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.97 ++++ | If a PTSE summary is received which is newer than that in the database and is one of this node's self-originated PTSE and this node still has a valid instance of the PTSE, is a newer version of the PTSE with a larger sequence number re-originated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.98 | If a PTSE summary is received which is newer than that in the database and is one of this node's self-originated PTSE and this node does not have a valid instance of the PTSE, is the PTSE flushed from the routing domain after installing it in the topology database with the remaining lifetime set to ExpiredAge? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.99 ++++ | If a PTSE summary is received which is newer than that in the database and with lifetime equal to ExpiredAge, is the header contents in the PTSE summary accepted as a new PTSE with empty contents? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.100 ++++ | If a PTSE summary is received which is newer than that in the database and that does not satisfy the conditions of PICS 3.14.97 and 3.14.99, is the PTSE put on the PTSE request list? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.101 | While in Loading if a Database Summary packet is received that is not a duplicate, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.102 | While in Loading if a Database Summary packet is received that has an inconsistent MS-bit, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.14.103 | While in Loading if a Database Summary packet is received that has the initialize bit set, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.104 | While in Full if a Database Summary packet is received that is not a duplicate, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.105 | While in Full if a Database Summary packet is received that has an inconsistent MS-bit, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.106 | While in Full if a Database Summary packet is received that has the initialize bit set, is the event DSMismatch generated? | | M | 5.7.6 | Yes_ No_ X_ S_ |
| 3.14.107 | Are PTSE request packets only sent in states Exchanging and Loading? | | M | 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.108 | When a PTSE Request packet is sent, is the Request Rxmt Timer restarted? | | M | 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.109 | When the proper PTSEs are received in response to requests, are those PTSE removed from the PTSE request list? | | M | 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.110 | When all of the requested PTSEs have been received, is a new PTSE Request packet sent? | | M | 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.111 | When the PTSE request list is empty and the state is Loading, is the event LoadingDone generated? | | M | 5.7.7 | Yes_ No_ X_ S_ |
| 3.14.112 | Are PTSE request packets accepted in the Exchanging state? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.113 | Are PTSE request packets accepted in the Loading state? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.114 | Are PTSE request packets accepted in the Full state? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.115 | Are PTSE Request packets ignored in the NPDown state? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.116 | Are PTSE Request packets ignored in the Negotiating state? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.117 | For each PTSE in the PTSE Request packet, if it is in the node's topology database, then is it transmitted to the neighbor? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.118 | Are the requested PTSEs not placed on the peer retransmission list? | | M | 5.7.8 | Yes_ No_ X_ S_ |
| 3.14.119 | If a PTSE cannot be found in the database, is the event BadPTSERequest generated? | | M | 5.7.8 | Yes_ No_ X_ S_ |

### I.3.15 Topology Description and Distribution

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.15.1 | Does the nodal information include:<br>- ATM End System address of the node?<br>- leadership priority?<br>- nodal information flags?<br>- preferred peer group leader node ID? | | <br>M<br>M<br>M<br>M | 5.8.1.2, Table 5-35 | Yes_ No_<br>X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.15.2 | When the IUT is acting as Peer Group Leader is the following information included in the nodal information<br>- next higher-level binding information? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.8.1.2, Table 5-35 | Yes_ No_<br>X_ S_ |
| 3.15.3 | Is the topology metric, CDV present for CBR and Real Time VBR service categories? | | M | 5.8.1.1.3.2, 5.8.5.2.5.6 | Yes_ No_<br>X_ S_ |
| 3.15.4 | Is the topology metric, MaxCTD present for CBR, Real Time VBR, and Non-Real Time VBR service categories? | | M | 5.8.1.1.3.3, 5.8.5.2.5.5 | Yes_ No_<br>X_ S_ |
| 3.15.5 | Is the topology metric, Administrative weight present for all service categories? | | M | 5.8.1.1.3.4, 5.8.5.2.5.1 | Yes_ No_<br>X_ S_ |
| 3.15.6 | Is the topology attribute, CLR0 present for CBR, Real Time VBR, and Non-Real Time VBR service categories? | | M | 5.8.1.1.3.5, 5.8.5.2.5.2 | Yes_ No_<br>X_ S_ |
| 3.15.7 | Is the topology attribute, CLR0+1 present for CBR, Real Time VBR, and Non-Real Time VBR service categories? | | M | 5.8.1.1.3.5, 5.8.5.2.5.3 | Yes_ No_<br>X_ S_ |
| 3.15.8 | Is the topology attribute, MaxCR present for ABR and UBR service categories? | | M | 5.8.1.1.3.7, 5.8.5.2.5.7 | Yes_ No_<br>X_ S_ |
| 3.15.9 | Is the topology attribute, AvCR present for CBR, Real Time VBR, Non-Real Time VBR and ABR service categories? | | M | 5.8.1.1.3.8 | Yes_ No_<br>X_ S_ |
| 3.15.10 | Is the Cell Rate Margin (CRM) topology attribute included with rt-VBR or nrt-VBR service categories? | | O | 5.8.1.1.3.9, 5.8.5.2.5.8 | Yes_ No_<br>X_ S_ |
| 3.15.11 | Is the Variance Factor (VF) topology attribute included with rt-VBR or nrt-VBR service categories? | | O | 5.8.1.1.3.10, 5.8.5.2.5.8 | Yes_ No_<br>X_ S_ |
| 3.15.12 | Is the Non-transit for PGL Election flag set to one when the node is operating in a topology database overload state? | | M | 5.8.1.2.3 | Yes_ No_<br>X_ S_ |
| 3.15.13 | Is the Non-transit for PGL Election flag set to zero when the node is operating normally? | | M | 5.8.1.2.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.15.14 | Does the internal reachable ATM address information group contain:<br>- Port ID?<br>- scope of advertisement?<br>- address information length?<br>- address information count?<br>- pairs of prefix length and prefix?<br>- Information group for resource available information? | | <br><br>M<br>M<br>M<br>M<br>M<br>O | 5.8.1.3.1 | Yes_ No_<br>X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.15.15 | Are only zero ports used as an internal reachable address advertisement advertised in any horizontal links or uplinks information groups in this node's PTSEs? | | M | 5.8.1.3.1 | Yes_ No_<br>X_ S_ |
| 3.15.16 | If Resource Availability information is specified with an internal reachable address, then is it specified for all service categories supported on that link in both directions? | | M | 5.8.1.3.1 | Yes_ No_<br>X_ S_ |
| 3.15.17 | Does the exterior reachable ATM address information group contain:<br>- Port ID?<br>- Scope of Advertisement?<br>- Address Information Length?<br>- Address Information Count?<br>- Pairs of prefix length and prefix?<br>- information groups for resource availability information?<br>- Transit Network ID IG? | | M<br><br>M<br>M<br>M<br>M<br>M<br>O<br>O | 5.8.1.3.2 | Yes_ No_<br>X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.15.18 | Are only zero ports used as an exterior reachable address advertisement advertised in any horizontal links or uplinks information groups in this node's PTSEs? | | M | 5.8.1.3.2 | Yes_ No_<br>X_ S_ |
| 3.15.19 | If Resource Availability information is specified with an exterior reachable address, then is it specified for all service categories supported on that link in both directions? | | M | 5.8.1.3.2 | Yes_ No_<br>X_ S_ |
| 3.15.20 | Does a PTSP header contain the following items:<br>- Originating node ID?<br>- Originating node's peer group ID? | | <br>M<br>M | 5.8.2.1 | X_ S_<br>Yes_ No_<br>Yes_ No_ |
| 3.15.21 | Does a PTSE contain the following items:<br>- PTSE Identifier?<br>- PTSE Sequence Number?<br>- PTSE Checksum?<br>- PTSE Remaining Lifetime?<br>- PTSE Type? | | <br>M<br>M<br>M<br>M<br>M | 5.8.2.1 | X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.15.22 | When two instances of the same PTSE exist simultaneously and are found to be separate instances, does the more recent one take precedence based on the following in order:<br>- PTSE with larger PTSE sequence number,<br>- PTSE with PTSE Remaining Lifetime equal to ExpiredAge,<br>- PTSE with larger Checksum? | | M | 5.8.2.2.4 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.15.23 | Is a PTSE Retransmission Timer associated with each PTSE in the PTSE Retransmission list for a particular neighbor? | | M | 5.8.3.1.3 | Yes_ No_ X_ S_ |
| 3.15.24 | Are all adjacencies in Exchanging, Loading or Full states used by the flooding procedures? | | M | 5.8.3.1 | Yes_ No_ X_ S_ |
| 3.15.25 | Are all adjacencies in Exchanging, Loading, or Full states capable of transmitting all types of PNNI routing packets? | | M | 5.8.3.1 | Yes_ No_ X_ S_ |
| 3.15.26 | Are all adjacencies in Exchanging, Loading, or Full states capable of receiving all types of PNNI routing packets? | | M | 5.8.3.1 | Yes_ No_ X_ S_ |
| 3.15.27 | During flooding, are PTSEs encapsulated in a PTSP? | | M | 3.2.3.5, 5.8.3.1 | Yes_ No_ X_ S_ |
| 3.15.28 | Does a node build and send PTSPs in response to a (self) origination of a new PTSE? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.29 | Does a node build and send PTSPs in response to a re-origination of a new instance of a (self originated) PTSE? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.30 | Does a node build and send PTSPs in response to installation into the database of a new instances of non-self-originated PTSEs? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.31 | Does a node build and send PTSPs in response to expiration of the PTSE retransmission timer? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.32 | Does a node build and send PTSPs in response to a PTSE request? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.33 | Does a node build and send PTSPs in response to the expiration of the PTSE remaining lifetime? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.34 | Are all PTSEs which are bundled into a single PTSP originated from the same node? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.35 | Does a node build PTSPs which are less than or equal to the maximum packet size allowed on the link? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.36 | Does a node not violate the traffic contract for the link it is using? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.37 | If a node cannot send a PTSP immediately to stay with the bounds of the traffic contract, is the state saved until conditions permit the PTSP to be sent? | | M | 5.8.3.2 | Yes_ No_ X_ S_ |
| 3.15.38 | If the PTSE Remaining Lifetime on the received PTSE is different from expired age, is the PTSE checksum validated? | | M | 5.8.3.3 | Yes_ No_ X_ S_ |
| 3.15.39 | If the PTSE Checksum on the received PTSE is determined to be invalid, is the processing of the PTSE complete? | | M | 5.8.3.3 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.15.40 | Is each PTSE on the PeerRetransmitList retransmitted every PTSERetransmissionInterval seconds? | | M | 5.8.3.4, 5.7.1, 3.2.3.5 | Yes_ No_ X_ S_ |
| 3.15.41 | Is the PTSE lifetime decremented by one from the current PTSE lifetime value in the database when the PTSE is (re)transmitted? | | M | 5.8.3.4 | Yes_ No_ X_ S_ |
| 3.15.42 | When the PeerDelayedAck Timer fires, are acknowledgement packets retransmitted that contain all the entries on the Peer Delayed Acks List, and the list cleared? | | M | 5.7.1, 5.8.3.5 | Yes_ No_ X_ S_ |
| 3.15.43 | Are acknowledgements, which have been transmitted, deleted from the Peer Delayed Acks list? | | M | 5.8.3.5 | Yes_ No_ X_ S_ |
| 3.15.44 | Can a node prematurely age only self-originated PTSEs? | | M | 5.8.3.8 | Yes_ No_ X_ S_ |
| 3.15.45 | When a node wants to age prematurely a PTSE, does it set the PTSE's PTSE remaining Lifetime to ExpiredAge? | | M | 5.8.3.8 | Yes_ No_ X_ S_ |
| 3.15.46 | Any time the PTSE's remaining lifetime becomes ExpiredAge, does the IUT (i.e., flush):<br>- delete the PTSE from all neighboring peers' Peer Retransmission Lists and Peer Delayed Ack Lists<br>- initiate a flood of the PTSE without contents? | | M | 5.8.3.8, 5.8.2.2.1 | Yes_ No_ X_ S_ |
| 3.15.47 ‡ | Is a PTSE removed from this node's topology state database only when:<br>- the PTSE's PTSE remaining Lifetime is equal to ExpiredAge,<br>- the PTSE is not contained on any of the node's Peer Retransmission Lists,<br>- the PTSE is not on any of the node's PeerDelayedAcks List<br>- none of the node's neighboring peers are in states Exchanging or Loading? | | O.1 | 5.8.3.9, 5.8.2.2.1 | Yes_ No_ X_ S_ |
| 3.15.48 ‡ | Is a PTSE removed from this node's topology state database only when:<br>- the PTSE's PTSE remaining Lifetime is equal to ExpiredAge,<br>- the PTSE is not contained on any of the node's Peer Retransmission Lists,<br>- none of the node's neighboring peers are in states Exchanging or Loading? | | O.1 | 5.8.3.9, 5.8.2.2.1 | Yes_ No_ X_ S_ |
| 3.15.49 | Does the node monitor the age of PTSEs collected in its topology database? | | M | 5.8.4 | Yes_ No_ X_ S_ |
| 3.15.50 | Are PTSEs, which have reached ExpiredAge, not used during route computation? | | M | 5.8.4 | Yes_ No_ X_ S_ |
| 3.15.51 | If the initial remaining lifetime is less than or equal to the elapsed time, is the remaining lifetime set to ExpiredAge? | | M | 5.8.4.1 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.15.52 | Are PTSEs re-originated after the PTSERefreshInterval? | | M | 5.8.4.2, 5.8.5 | Yes_ No_ X_ S_ |
| 3.15.53 | Is there a minimum time (i.e., MinPTSEInterval) between successive re-originations of PTSEs? | | M | 5.8.5, 5.8.5.2 | Yes_ No_ X_ S_ |
| O.1 - At least one of these must be supported | | | | | |

### I.3.16 Advertising and Summarizing Reachable Address

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.16.1 | Are addresses only eligible for advertisement or summarization, if the scope is higher than or equal to that of the peer group? | SS_P<br>NOT SS_P | M<br>N/A | 5.9.1 | Yes_ No_<br>X_ S_ |
| 3.16.2 | If suppression is configured for a given reachability advertisement, is advertisement of that address suppressed regardless of scope? | SS_P<br>NOT SS_P | M<br>N/A | 5.9.2 | Yes_ No_<br>X_ S_ |
| 3.16.3 | Does the IUT support the ability to suppress summary addresses? | SS_P<br>NOT SS_P | O<br>N/A | 5.9.2 | Yes_ No_<br>X_ S_ |
| 3.16.4 | When overlapping summary addresses and/or suppressed summary addresses are present, is the longest matching address used to determine how or if it is advertised? | SS_P<br>NOT SS_P | M<br>N/A | 5.9.2 | Yes_ No_<br>X_ S_ |

**I.3.17 Hierarchy**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.1 | Is the PGL election continuously running? | | M | 3.2.4 | Yes_ No_ X_ S_ |
| 3.17.2 | If the parent peer group ID of the IUT is not configured does it advertise its Peer group leadership priority as zero? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 3.3.1 | Yes_ No_ X_ S_ |
| 3.17.3 | When a node is selecting its choice for PGL, does it select based on highest non-zero advertised PGL priority? | | M | 3.2.4, 5.10.1, 5.10.1.1, 5.10.1.1.6, 5.10.1.2.2 | Yes_ No_ X_ S_ |
| 3.17.4 | If there is a tie between the highest non-zero advertised PGL priorities, is the node with the larger node ID selected as the preferred PGL? | | M | 5.10.1.1 | Yes_ No_ X_ S_ |
| 3.17.5 | Does this node vote in a PGL election for its peer group? | | M | 5.10.1.1 | Yes_ No_ X_ S_ |
| 3.17.6 | Under normal conditions, do all nodes in a peer group participate in PGL election? | | M | 5.10.1.1 | Yes_ No_ X_ S_ |
| 3.17.7 | Does a node with Non-transit for PGL Election flag set in its nodal IG, not participate in PGL election? | | M | 5.10.1.1 | Yes_ No_ X_ S_ |
| 3.17.8 | Does this switch maintain local information (Peer Group Leader election data structure) which consists of:<br>- state,<br>- PreferredPeerGroupLeader,<br>- PreferredPGLLeadershipPriority,<br>- SearchPeer Timer,<br>- PGLInit Timer,<br>- Override Unanimity Timer, and<br>- ReElection Timer? | | M | 5.10.1.1.1 | Yes_ No_ X_ S_ |
| 3.17.9 | Does the node wait PGLInitTime before it selects and advertises its choice for PGL? | | M | 5.10.1.1.2 | Yes_ No_ X_ S_ |
| 3.13.10 | Is the PGL InitTimer started when the node has received the entire database from at least one neighbor? | | M | 5.10.1.1.4 | Yes_ No_ X_ S_ |
| 3.17.11 | When in Starting state and the event, Hello FSM Started occurs, is the SearchPeer Timer started and the Awaiting state entered? | | M | Table 5-14 PGLE1 | Yes_ No_ X_ S_ |
| 3.17.12 | When in Awaiting state and the event, Peer Found occurs, is the SearchPeer Timer stopped and the AwaitingFull state entered? | | M | Table 5-14 PGLE2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.13 | When in Awaiting state and the event, SearchPeer Timer Expired occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | | M | Table 5-14 PGLE4 | Yes_ No_ X_ S_ |
| 3.17.14 | When in AwaitingFull state and the event, PeerFound, occurs, does nothing occur? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.15 | When in AwaitingFull state and the event, Lost All Peers occurs, is the SearchPeer Timer restarted and is the Awaiting state entered? | | M | Table 5-14 PGLE3 | Yes_ No_ X_ S_ |
| 3.17.16 | When in AwaitingFull state and the event, DB Received, occurs, is the PGLInit timer started; a PTSE originated with its leadership priority, the "I am leader" bit set to 0 and the Preferred peer group leader node ID set to 0; and the InitialDelay state entered? | | M | Table 5-14 PGLE5 | Yes_ No_ X_ S_ |
| 3.17.17 | When in InitialDelay state and the event, PeerFound, occurs, does nothing occur? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.18 | When in InitialDelay state and the event, Lost All Peers, occurs, does nothing occur? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.19 | When in InitialDelay state and the event, DB Received, occurs, does nothing occur? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.20 | When in InitialDelay state and the event, PGLInit Timer Expired, occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | | M | Table 5-14 PGLE4 | Yes_ No_ X_ S_ |
| 3.17.21 | When in Calculating state and the event, Peer Found occurs, does the IUT do nothing? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.22 | When in Calculating state and the event, Lost All Peers, occurs, does the IUT do nothing? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.23 | When in Calculating state and the event, DB Received, occurs, does the IUT do nothing? | | M | Table 5-14 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.24 | When in Calculating state and the event, Preferred PGL Not Self, occurs and the preferred Peer Group Leader is different from the previously advertised one, is a new instance of the Nodal Information PTSE originated with the new preferred Peer Group Leader ID with the "I am Leader" bit set to 0, and the OperNotPGL state entered? | | M | Table 5-14 PGLE7 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.25 | When in Calculating state and the event, Preferred PGL Self occurs, is a new instance of the Nodal Information PTSE originated with the preferred Peer Group Leader ID set to this node's ID and the "I am leader" bit set to 0; the OverrideUnanimity timer started; and the AwtUnanimity state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-14 PGLE9 | Yes_ No_ X_ S_ |
| 3.17.26 | When in OperNotPGL state and the event, Peer Found, occurs, does the IUT do nothing? | | M | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.27 | When in OperNotPGL state and the event, Lost All Peers, occurs, does the IUT do nothing? | | M | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.28 | When in OperNotPGL state and the event, DB Received, occurs, does the IUT do nothing? | | M | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.29 | When in OperNotPGL state and the event, Change Preferred PGL, occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | | M | Table 5-15 PGLE4 | Yes_ No_ X_ S_ |
| 3.17.30 | When in OperNotPGL state and the event, Lose Connectivity To PGL, occurs, is the Reelection timer started and the AwtReElection state entered? | | M | Table 5-15 PGLE10 | Yes_ No_ X_ S_ |
| 3.17.31 | When in OperPGL state and the event, Peer Found, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.32 | When in OperPGL state and the event, Lost All Peers, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.33 | When in OperPGL state and the event, DB Received, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.34 | When in OperPGL state and the event, Unanimity, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.35 | When in OperPGL state and the event, Two Third Reached, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_ X_ S_ |
| 3.17.36 | When in OperPGL state and the event, Change Preferred PGL, occurs, is a new instance of the nodal Information PTSE originated with updated Preferred Peer Group Leader ID field, original leadership priority and the "I am leader" bit set to 0; deactivates its parent LGN; and the Calculating state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.37 | When in AwtUnanimity state and the event, Peer Found, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.38 | When in AwtUnanimity state and the event, Lost All Peers, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.39 | When in AwtUnanimity state and the event, DB Received, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.40 | When in AwtUnanimity state and the event, Unanimity, occurs, is the node's leadership priority increased by Group-LeaderIncrement; is the Over-rideUnanimity timer stopped, if running; is a new instance of the Nodal Information PTSE originated with the updated leadership priority and the "I am leader" bit set to 1 and higher level peer group included; and the OperPGL state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE8 | Yes_ No_<br>X_ S_ |
| 3.17.41 | When in AwtUnanimity state and the event, Override Unanimity Success, occurs, is the node's leadership priority increased by GroupLeaderIncrement; is the OverrideUnanimity timer stopped, if running; is a new instance of the Nodal Information PTSE originated with the updated leadership priority and the "I am leader" bit set to 1 and higher level peer group included; and the OperPGL state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE8 | Yes_ No_<br>X_ S_ |
| 3.17.42 | When in AwtUnanimity state and the event, Override Unanimity Failure, occurs, is the HungElection state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.43 | When in AwtUnanimity state and the event, Two Third Reached, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.44 | When in AwtUnanimity state and the event, Change Preferred PGL occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE4 | Yes_ No_<br>X_ S_ |
| 3.17.45 | When in HungElection state and the event, Peer Found, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.46 | When in HungElection state and the event, Lost All Peers, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.47 | When in HungElection state and the event, DB Received, occurs, does the IUT do nothing? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.48 | When in HungElection state and the event, Unanimity, occurs, is the node's leadership priority increased by Group-LeaderIncrement; is the Over-rideUnanimity timer stopped, if running; is a new instance of the Nodal Information PTSE originated with the updated leadership priority and the "I am leader" bit set to 1 and higher level peer group included; and the OperPGL state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE8 | Yes_ No_<br>X_ S_ |
| 3.17.49 | When in HungElection state and the event, Two Third Reached, occurs, is the node's leadership priority increased by GroupLeaderIncrement; is the OverrideUnanimity timer stopped, if running; is a new instance of the Nodal Information PTSE originated with the updated leadership priority and the "I am leader" bit set to 1 and higher level peer group included; and the OperPGL state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE8 | Yes_ No_<br>X_ S_ |
| 3.17.50 | When in HungElection state and the event, Change Preferred PGL occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | SS_P<br><br>NOT SS_P | M<br><br>N/A | Table 5-15 PGLE4 | Yes_ No_<br>X_ S_ |
| 3.17.51 | When in AwtReElection state and the event, PeerFound, occurs, does nothing occur? | | M | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.52 | When in AwtReElection state and the event, Lost All Peers, occurs, does nothing occur? | | M | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.53 | When in AwtReElection state and the event, DB Received, occurs, does nothing occur? | | M | Table 5-15 PGLE0 | Yes_ No_<br>X_ S_ |
| 3.17.54 | When in AwtReElection state and the event, Change Preferred PGL occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | | M | Table 5-15 PGLE4 | Yes_ No_<br>X_ S_ |
| 3.17.55 | When in AwtReElection state and the event, Reestablish connectivity To PGL, occurs, is the ReElection Timer stopped and the OperNotPGL state entered? | | M | Table 5-15 PGLE11 | Yes_ No_<br>X_ S_ |
| 3.17.56 | When in AwtReElection state and the event, ReElection Timer Expired occurs, is the value of its PreferredPeerGgroup-Leader (re-)evaluated; are timers: OverrideUnanimity and ReElection stopped, if running; and the Calculating state entered? | | M | Table 5-15 PGLE4 | Yes_ No_<br>X_ S_ |
| 3.17.57 | At the beginning of the peer group leader election, does the node originate a PTSE that contains a nodal information group? | | M | 5.10.1.1.5 | Yes_ No_<br>X_ S_ |
| 3.17.58 | Is the preferred peer group ID field set to zero, while in states Awaiting, AwaitingFull, and InitialDelay and Non-transit for PGL Election flag set? | | M | 5.10.1.1.5 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.17.59 ‡ | Is the "I am leader" bit set only while in state OperPGL? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.10.1.1.5 | Yes_ No_<br>X_ S_ |
| 3.17.60 | Does the node reevaluate the value of its PreferredPeerGroupLeader each time it receives and accepts a PTSE that contains a nodal information group? | | M | 5.10.1.1.6 | Yes_ No_<br>X_ S_ |
| 3.17.61 | When a node concludes that it is peer group leader, does it increment its advertised peer group leadership priority by GroupLeaderIncrement? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 3.2.4, 5.10.1.2.1 | Yes_ No_<br>X_ S_ |
| 3.17.62 | When an uplink advertisement is generated and injected into a peer group, does it contain metrics for both directions? | SS_B<br><br>NOT SS_B | M<br><br>N/A | 5.10.2 | Yes_ No_<br>X_ S_ |
| 3.17.63 | When nodes at the ends of an outside link discover that the other node is in a different peer group, do they include Resource Availability information for the outbound direction in their Hello packets? | SS_B<br><br>NOT SS_B | M<br><br>N/A | 5.10.2.1 | Yes_ No_<br>X_ S_ |
| 3.17.64 | Do PTSEs never flow up the hierarchy? | | M | 3.3.2, 5.10.4 | Yes_ No_<br>X_ S_ |
| 3.17.65 | Are upper level PTSEs sent into the peer group by the PGL? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.10.4 | Yes_ No_<br>X_ S_ |

### I.3.18 Peer Group Partitions

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.18.1 | When a PGL of a partition aggregates or summarizes its partition, does it only use the link state information that pertains to its partition? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.11.3 | Yes_ No_<br>X_ S_ |

### I.3.19 Topology Database Overload

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.19.1 | Is this node able to store and advertise all state information describing itself? | | M | 5.12.1.1 | Yes_ No_ X_ S_ |
| 3.19.2 | If the node is not able to store and advertise all state information describing itself, does it halt? | | M | 5.12.1.1 | Yes_ No_ X_ S_ |
| 3.19.3 | Is this node able to store and advertise all topology state describing the links to its neighbors? | | M | 5.12.1.1 | Yes_ No_ X_ S_ |
| 3.19.4 | If the node is not able to store and advertise all topology state describing the links to its neighbors, does it not bring up links which it cannot store the associated state? | | M | 5.12.1.1 | Yes_ No_ X_ S_ |
| 3.19.5 | When in topology database overload state, does the node not bring up any outside link? | | M | 5.12.1.2 | Yes_ No_ X_ S_ |
| 3.19.6 | When in topology database overload state, does the node not act as a DTL originator? | | M | 5.12.1.2 | Yes_ No_ X_ S_ |
| 3.19.7 | When in topology database overload state, does the node set the Non-Transit for PGL Election flag? | | M | 5.12.1.3 | Yes_ No_ X_ S_ |
| 3.19.8 | When in topology database overload state, does the node advertise zero as its Leadership Priority? | | M | 5.12.1.3, 5.10.1.1, 5.10.1.1.5 | Yes_ No_ X_ S_ |
| 3.19.9 | When in topology database overload state, does the node advertise zero as its Preferred PGL? | | M | 5.12.1.3, 5.10.1.1, 5.10.1.1.5 | Yes_ No_ X_ S_ |
| 3.19.10 | When in topology database overload state, does the node continue to send PTSE acknowledgements? | | M | 5.12.1.4 | Yes_ No_ X_ S_ |
| 3.19.11 | When in topology database overload state, does the node continue to originate and flood PTSEs describing its own state and that of any of its active links? | | M | 5.12.1.4 | Yes_ No_ X_ S_ |
| 3.19.12 | When in topology database overload state, does the node periodically (i.e., OverloadRetryTime) attempt to resynchronize with its neighbors? | | M | 5.12.1.5 | Yes_ No_ X_ S_ |
| 3.19.13 | If the node is able to return to normal, does it clear the Non-Transit for PGL Election flag? | | M | 5.12.1.5 | Yes_ No_ X_ S_ |

**I.3.20 Path Selection**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.20.1 | If a node is unable to follow the specified DTL for a specific call request, does it refuse the call request? | | M | 3.7 | Yes_ No_ X_ S_ |
| 3.20.2 | If a node is unable to follow the specified DTL for a specific call request, does it crankback the call to the node that originated the DTL? | | M | 3.7 | Yes_ No_ X_ S_ |
| 3.20.3 | Is the path used to cross a lower level peer group consistent with the path selected by higher levels? | SS_B<br><br>NOT SS_B | M<br><br>O | 3.7 | Yes_ No_ X_ S_ |
| 3.20.4 | For point to multipoint connections does the node select a path that the resulting connection is a tree? | | M | 5.13 | Yes_ No_ X_ S_ |
| 3.20.5 | If the node with the longest prefix is an ancestor, then is the destination considered unreachable? | | M | 5.13 | Yes_ No_ X_ S_ |
| 3.20.6 ‡ | When the node receives a SETUP or ADD PARTY message that does not include a Transit network selection IE with a DTL stack indicating that it is the last node in the path, but the only best match address prefixes of wide enough scope are summary addresses advertised by this node or one of its ancestors, is the call cleared with cause #3 "no route to destination"? | | M | 5.13, Annex B, 8.2.1.1 | Yes_ No_ X_ S_ |
| 3.20.7 | When a Transit network election information element is present in the SETUP or ADD PARTY message, is the call routed to a node that advertises reachability to the specified transit network? | | M | 5.13, 7.2.1, 7.2.2, 7.3 | Yes_ No_ X_ S_ |
| 3.20.8 | When a Connection scope information element is present in the SETUP or ADD PARTY message, does the DTL originator route the call to a node reachable within the indicated connection scope? | | M | 5.13, 7.2.1 | Yes_ No_ X_ S_ |
| 3.20.9 | When the called party number is a group address and no Connection scope information element is present in the SETUP or ADD PARTY message, does the DTL originator route the call to a node reachable within the default connection scope of "localNetwork"? | | M | 5.13, 7.2.1 | Yes_ No_ X_ S_ |
| 3.20.10 | When an entry border node selects a path to the called party number or designated transit network, does the node at the end of the selected path have connectivity to the target with advertised membership scope at least as high as the path scope? | SS_B<br><br>NOT SS_B | M<br><br>N/A | 5.13, 7.2.2 | Yes_ No_ X_ S_ |
| 3.20.11 | Does the DTL terminator progress the call using connectivity to the transit network or called party number with advertised membership scope higher than or equal to the path scope? | | M | 5.13, 7.3 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.20.12 | When this node is computing a path from DTL Originator across a PNNI routing domain, are uplinks only used if a corresponding horizontal link was advertised from an ancestor of this node? | | M | 5.13.1 | Yes_ No_ X_ S_ |
| 3.20.13 | For UBR connections is a link/node only included if the UBR service class is supported and the Maximum Cell Rate is not equal to zero? | | M | 5.13.3 | Yes_ No_ X_ S_ |
| 3.20.14 | For ABR connections is a link/node only included if the ABR service class is supported, the Maximum Cell Rate is not equal to zero, and the advertised Available Cell Rate for the ABR traffic class is greater than or equal to the Minimum Cell Rate specified by the connection? | | M | 5.13.5 | Yes_ No_ X_ S_ |

**I.3.21 Packet Formats**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.21.1 | Are all reserved fields set to zero upon transmission? | | M | 5.14, 5.14.2.6 | Yes_ No_ X_ S_ |
| 3.21.2 | Are all reserved fields ignored upon reception? | | M | 5.14, 5.14.2.6 | Yes_ No_ X_ S_ |
| 3.21.3 | If a system receives a PTSE with a top level mandatory tagged information group that is otherwise unknown, does it:<br>- accept the PTSE,<br>- check the checksum,<br>- check the sequence number, and<br>- acknowledge, store, and forward the PTSE? | | M | 5.14.2.1 | Yes_ No_ X_ S_ |
| 3.21.4 | Are all phase 1 information groups recognized? | | M | 5.14.2.1 | Yes_ No_ X_ S_ |
| 3.21.5 ‡ | If an unknown information group is tagged non-transitive, then is the information group removed prior to summarization? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.14.2.3 | Yes_ No_ X_ S_ |
| 3.21.6 ‡ | If an unknown information group that is not a top level information group in the PTSE is tagged as summarizable and transitive, then is the information group preserved? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.14.2.3 | Yes_ No_ X_ S_ |
| 3.21.7 ‡ | If two or more advertisements which are being aggregated each carry an unknown information group of the same transitive type, but with different values, does the PGL preserve the information groups by advertising the same information group multiple times? | SS_P<br><br>NOT SS_P | M<br><br>N/A | 5.14.2.3 | Yes_ No_ X_ S_ |
| 3.21.8 ‡ | Are all PNNI 1.0 information groups originated with their information group tag values set to optional, summarizable, non-transitive, except the Transit network ID information group and the Systems capabilities information group? | | M | 5.14.2.6 | Yes_ No_ X_ S_ |
| 3.21.9 | Is the Transit network ID information group originated with its information group tag values set to have the values optional, summarizable and transitive? | | M | 5.14.2.6 | Yes_ No_ X_ S_ |
| 3.21.10 | Do all PNNI routing packets begin with a common PNNI packet header containing: packet type, packet length, protocol version, newest version supported, oldest version supported, and a one octet reserved field? | | M | 5.14.4, Table 5-20 | Yes_ No_ X_ S_ |
| 3.21.11 | Do uplink advertisements made by border nodes and PGLs include an Uplink Information Attribute? | | M | 5.14.6, 3.3.4 | Yes_ No_ X_ S_ |
| 3.21.12 | Is a Resource Availability Information Group included for each service category supported? | | M | 5.14.6 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.21.13 | Are all metrics and attributes for each input-output port pair included in the same nodal state parameters information group? | | M | 5.14.9.1.1 | Yes_ No_ X_ S_ |
| 3.21.14 | Are all metrics and attributes associated with each exterior reachable ATM address included in the same exterior reachable ATM address information group to which the reachable address appears? | | M | 5.14.9.1.4 | Yes_ No_ X_ S_ |
| 3.21.15 | Are all metrics and attributes associated with each horizontal link included in the same horizontal link information group? | SS_P or SS_N<br>NOT (SS_P or SS_N) | M<br>N/A | 5.14.9.1.5 | Yes_ No_ X_ S_ |
| 3.21.16 | Are all metrics and attributes associated with each uplink included in the same uplink information group? | SS_B<br>NOT SS_B | M<br>N/A | 5.14.9.1.6 | Yes_ No_ X_ S_ |
| 3.21.17 | Is the system capabilities field permitted in all PNNI packets? | | M | 5.14.3, Table 5-18 | Yes_ No_ X_ S_ |
| 3.21.18 | If a PTSE includes a restricted information group whose type does not match the PTSEType, is the information contained in such a group ignored for the sake of all state significant computations? | | M | 5.14.9.4 | Yes_ No_ X_ S_ |
| 3.21.19 ‡ | If a Nodal Info IG appears multiple times in a Nodal Info PTSE, is only the first thereof used for the sake of all state significant computations? | | M | 5.14.9.5.1 b) | Yes_ No_ X_ S_ |
| 3.21.20 ‡ | If a Nodal Info IG does not appear in a Nodal Info PTSE, are all the PTSEs of the node disregarded for the sake of all state significant computations? | | M | 5.14.9.5.1 c) | Yes_ No_ X_ S_ |
| 3.21.21 ‡ | If a Higher Level Binding IG appears inside of a Nodal Info PTSE with a cleared "I am PGL"-bit, is it ignored for the sake of state significant computations? | | M | 5.14.9.5.2 a) | Yes_ No_ X_ S_ |
| 3.21.22 ‡ | If a Higher Level Binding IG appears multiple times in a Nodal Info PTSE for a node with a set "I am PGL"-bit, is only the first thereof used for the sake of all state significant computations? | | M | 5.14.9.5.2 b) | Yes_ No_ X_ S_ |
| 3.21.23 ‡ | If a Nodal State parameters IG appears multiple times in a Nodal State PTSE for a node with a set "Nodal Representation"-bit, is only the first thereof used for the sake of all state significant computations? | | M | 5.14.9.5.3 b) | Yes_ No_ X_ S_ |
| 3.21.24 ‡ | If the default spoke does not appear for a node with a set "Nodal Representation"- bit, are all spokes of this node ignored in state-significant computations unless exceptions are advertised for both directions, except for reachability computations? | | M | 5.14.9.5.3 c) | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.21.25 ‡ | If a Nodal State parameters IG appears multiple times in multiple Nodal State PTSEs for a node with a set "Nodal Representation"-bit, is only the first one appearing in the PTSE with the lowest PTSEId used for the sake of all state significant computations? | | M | 5.14.9.5.3 e) | Yes_ No_ X_ S_ |
| 3.21.26 ‡ | If a node does not have the "Nodal Representation"- bit set and the node exposes a Nodal State representation, is this representation ignored for the sake of all state significant computations? | | M | 5.14.9.5.3 a) | Yes_ No_ X_ S_ |
| 3.21.27 ‡ + | If a Horizontal Link IG appears multiple times in a Horizontal Link PTSE, is only the first one used for the sake of all state significant computations? | | M | 5.14.9.5.4 b) | Yes_ No_ X_ S_ |
| 3.21.28 ‡ + | If a Horizontal Link IG appears multiple times in multiple Horizontal Link PTSEs, is only the first one appearing in the PTSE with the lowest PTSEId used for the sake of all state significant computations? | | M | 5.14.9.5.4 e) | Yes_ No_ X_ S_ |
| 3.21.29 + | Is 3.21.27 and 3.21.28 true for uplinks? | | M | 5.14.9.5.5 | Yes_ No_ X_ S_ |
| 3.21.30 ‡ | If multiple ULIAs appear in a Uplink IG, is only the first one used for the sake of all state significant computations? | | M | 5.14.9.5.6 | Yes_ No_ X_ S_ |
| 3.21.31 ‡ | If an uplink IG does not have a ULIA associated with it, is the link ignored for route computation? | | M | 5.14.9.5.6 | Yes_ No_ X_ S_ |
| 3.21.32 | If a service category appears in multiple RAIGs within a horizontal, uplink, nodal state or ULIA IG, is only the first RAIG in which this service category appears applied for this service category in all state significant computations? | | M | 5.14.9.5.7 | Yes_ No_ X_ S_ |
| 3.21.33 ‡ | If no valid nodal information PTSE is present, are all the PTSEs of the node ignored for the sake of all state-significant computations? | | M | 5.14.9.6 | Yes_ No_ X_ S_ |

### I.3.22 Signalling

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.22.1 | If no VPCs are configured for use as logical links on the interface, is the default signalling channel on VPI=0? | | M | 4.3 | Yes_ No_<br>X_ S_ |
| 3.22.2 | If no VPCs are configured for use as logical links on an interface, does the default signalling channel control all the virtual paths on the interface? | | M | 4.3 | Yes_ No_<br>X_ S_ |
| 3.22.3 | Are virtual channels within a configured VPC controlled only by the associated signalling channel of that particular VPC? | | M | 4.3 | Yes_ No_<br>X_ S_ |
| 3.22.4 | When cranking back, does the alternate path avoid the blocked node(s) or link(s)? | | M | 4.5 | Yes_ No_<br>X_ S_ |
| 3.22.5 | Are all bits of the VPI or VCI subfields that are not allocated set to zero? | | M | 6.1.2.3 | Yes_ No_<br>X_ S_ |

**I.3.23 Messages functional definitions and contents**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.23.1 | For the purposes of message format and information element content and format are the procedures of ATM UNI Signalling Specification v4.0 and PNNI section 6.3 followed? | | M | 6.3 | Yes_ No_ X_ S_ |
| 3.23.2 | If a SETUP message is sent with an Endpoint reference information element, does the ALERTING message include the Endpoint reference information element? | | M | 6.3.1.1 | Yes_ No_ X_ S_ |
| 3.23.3 | If a SETUP message is sent with an Endpoint reference information element, does the CALL PROCEEDING message include the Endpoint reference information element? | | M | 6.3.1.2 | Yes_ No_ X_ S_ |
| 3.23.4 | If a SETUP message is sent with an Endpoint reference information element, does the CONNECT message include the Endpoint reference information element? | | M | 6.3.1.3 | Yes_ No_ X_ S_ |
| 3.23.5 | If the calling user requested an ABR traffic category connection, is the ATM traffic descriptor information element included in the CONNECT message? | | M | 6.3.1.3 | Yes_ No_ X_ S_ |
| 3.23.6 | Is the Cause information element included in the RELEASE COMPLETE message, when it is the first call clearing message? | | M | 6.3.1.5 | Yes_ No_ X_ S_ |
| 3.23.7 | Is the Connection identifier included in the SETUP message when using non-associated signalling procedures? | | M | 6.3.1.6 | Yes_ No_ X_ S_ |
| 3.23.8 | Are one or more Designated transit list information elements included in the SETUP or ADD PARTY message? | | M | 6.3.1.6, 6.3.4.1, 7.2.1 | Yes_ No_ X_ S_ |
| 3.23.9 | Are the Designated transit list information element(s) immediately preceded by a Broadband repeat indicator information element coded to indicate Last-in, First out stack? | | M | 6.3.1.6, 6.3.4.1, 7.2.1 | Yes_ No_ X_ S_ |
| 3.23.10 | If the calling user requested an ABR traffic category connection, is the ATM setup parameters information element included in the SETUP message? | | M | 6.3.1.6, 6.5.2.3.6 | Yes_ No_ X_ S_ |
| 3.23.11 | Is a STATUS message sent in response to a STATUS ENQUIRY message? | | M | 6.3.1.7, 6.3.1.8 | Yes_ No_ X_ S_ |
| 3.23.12 | Are the following messages sent using the global call reference?<br>- RESTART<br>- RESTART ACKNOWLEDGE | | M | 6.3.3<br><br><br><br>6.3.3.1<br>6.3.3.2 | Yes_ No_ X_ S_ |
| 3.23.13 | Is the Endpoint reference value unique within a given call reference on a given link? | | M | 6.3.4.1 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.23.14 | Is the Endpoint reference value in the ADD PARTY ACKNOWLEDGE message, the same value as in the ADD PARTY message being responded to? | | M | 6.3.4.2 | Yes_ No_ X_ S_ |
| 3.23.15 | Is the Endpoint reference value in the ADD PARTY REJECT message, the same value as in the ADD PARTY message being responded to? | | M | 6.3.4.4 | Yes_ No_ X_ S_ |
| 3.23.16 | When a DROP PARTY ACKNOWLEDGE message is sent as a result of an error condition, is the Cause information element included? | | M | 6.3.4.6 | Yes_ No_ X_ S_ |
| 3.23.17 | Does the Crankback information element always include the crankback cause code? | | M | 6.4.6.3, 8.2 | Yes_ No_ X_ S_ |

### I.3.24 Call/Connection control procedures

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.1 | Does the IUT use VPI=0 and VCI=5 for non-associated signalling as the default? | | M | 6.5 | Yes_ No_ X_ S_ |
| 3.24.2 | Does the IUT use VPI=X and VCI=5 for associated signalling? | | M | 6.5 | Yes_ No_ X_ S_ |
| 3.24.3 | For signalling is the assured mode of the AAL used? | | M | 6.5.1 | Yes_ No_ X_ S_ |
| 3.24.4 | Are all layer 3 messages sent to the signalling AAL using the AAL-DATA-REQUEST primitive? | | M | 6.5.1 | Yes_ No_ X_ S_ |
| 3.24.5 | Is call establishment initiated by the preceding side by sending a SETUP message? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.6 | After sending the SETUP message does the preceding side start timer T303? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.7 | After sending the SETUP message does the preceding side enter the Call Present state? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.8 | Does the SETUP message contain a call reference? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.9 | Is the SETUP message only sent when resources for the call are available for the preceding side? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.10 | If resources are not available is the call cleared towards the calling user? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.11 | Does the SETUP message contain all the information required to process the call? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.12 | Does the SETUP message contain the called party address information in the Called Party number information element? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.13 | Does the SETUP message contain the called party subaddress information element as a supplement to the called party number information element? | | O | 6.5.2.1, Figure 6-8 | Yes_ No_ X_ S_ |
| 3.24.14 | Does the SETUP message contain the ATM traffic descriptor information element? | | M | 6.5.2.1, Figure 6-8 | Yes_ No_ X_ S_ |
| 3.24.15 | Does the SETUP message contain the Broadband bearer capability information element? | | M | 6.5.2.1, Figure 6-8 | Yes_ No_ X_ S_ |
| 3.24.16 | Does the SETUP message contain the Quality of service parameter information element? | | M | 6.5.2.1, Figure 6-8 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.17 | When the SETUP message contains an ATM group address in the Called party number information element, is the call progressed to one of the members of the group within the connection scope indicated? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.18 | When the SETUP message contains an ATM group address in the Called party number information element and the Connection scope selection information element is not included in the SETUP message, is the default (i.e., localNetwork(1)) Connection scope selection assumed? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.19 | If no response to the SETUP message is received by the preceding side before the first expiration of timer T303, is the SETUP retransmitted and timer T303 restarted? | | O | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.20 | If the preceding side does not receive any response to the SETUP after final expiration of timer T303 does the preceding side enter the Null state? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.21 | If the preceding side does not receive any response to the SETUP after final expiration of timer T303 does the preceding side send a RELEASE COMPLETE message to the succeeding side with cause #102? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.22 | If the preceding side does not receive any response to the SETUP after final expiration of timer T303 does the preceding side initiate clearing without crankback towards the calling party with cause #102? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.23 | If the preceding side does not receive any response to the SETUP after final expiration of timer T303 does the preceding side notify call control of the call failure? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.24 | Does the succeeding side enter the Call Initiated state on receipt of a SETUP message? | | M | 6.5.2.1 | Yes_ No_ X_ S_ |
| 3.24.25 | Does the IUT support associated signalling (i.e., exclusively control the VCs in the VPC which carries the signalling VC)? | | O | 6.5.2.2 | Yes_ No_ X_ S_ |
| 3.24.26 | Does the IUT support non-associated signalling? | | M | 6.5.2.2 | Yes_ No_ X_ S_ |
| 3.24.27 | Are the associated signalling procedures only used when two PNNI network nodes are connected by a virtual path connection used as a logical link? | | M | 6.5.2.2 | Yes_ No_ X_ S_ |
| 3.24.28 | Absent other errors is the call rejected with cause #36 when a Connection identifier information element is received with the VP-associated signalling field coded with a value not supported by this network node? | | M | 6.5.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.29 | For associated signalling when the preceding side having lower node ID than succeeding side requests a virtual channel in the SETUP does it indicate Exclusive VPCI; any VCI? | | M | 6.5.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.30 | For associated signalling if the received Connection identifier information element indicated Exclusive VPCI; any VCI and no VCI is available, is a RELEASE COMPLETE message with cause #45 and with a crankback information element with crankback cause #45 sent? | | M | 6.5.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.31 | For associated signalling when the preceding side having higher node ID than succeeding side requests a virtual channel in the SETUP does it indicate Exclusive VPCI; exclusive VCI? | | M | 6.5.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.32 | For associated signalling if the received Connection identifier information element indicated Exclusive VPCI; exclusive VCI and the indicated VCI is not available, is a RELEASE COMPLETE message with cause #35 and with a crankback information element with crankback cause #35 sent? | | M | 6.5.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.33 | For non-associated signalling when the preceding side having lower node ID than succeeding side requests a virtual channel in the SETUP does it indicate Exclusive VPCI; any VCI? | | O.1 | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.34 | For non-associated signalling if the received Connection identifier information element indicated Exclusive VPCI; any VCI and no VCI is available, is a RELEASE COMPLETE message with cause #45 and with a crankback information element with crankback cause #45 sent? | | M | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.35 | For non-associated signalling when the preceding side having higher node ID than succeeding side requests a virtual channel in the SETUP does it indicate Exclusive VPCI; exclusive VCI? | | M | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.36 | For non-associated signalling if the received Connection identifier information element indicated Exclusive VPCI; exclusive VCI and the indicated VCI is not available, is a RELEASE COMPLETE message with cause #35 and with a crankback information element with crankback cause #35 sent? | | M | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.37 | For non-associated signalling if the received Connection identifier information element indicated an Exclusive VPCI and it is not available, is a RELEASE COMPLETE message with cause #35 and with a crankback information element with crankback cause #35 sent? | | M | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.38 | For non-associated signalling when the preceding side having lower node ID than succeeding side requests a virtual channel in the SETUP does it not include the connection identifier information element? | | O.1 | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.39 | For non-associated signalling if the SETUP did not contain a connection identifier and no VCI can be allocated in any VPCI, is a RELEASE COMPLETE message with cause #45 and with a crankback information element with crankback cause #45 sent? | | M | 6.5.2.2.2.1 | Yes_ No_ X_ S_ |
| 3.24.40 | Does the IUT understand the relationship between the VPCI used in the signalling protocol and the actual VPI used for the user information flow? | | M | 6.5.2.2.3 | Yes_ No_ X_ S_ |
| 3.24.41 | Does each non-associated signalling virtual channel control only a single interface and the VPCI and VPI have the same numerical value? | | M | 6.5.2.2.3 | Yes_ No_ X_ S_ |
| 3.24.42 | If the service category is not available, is crankback initiated with cause and crankback cause code #57, #58 or #65? | | M | 6.5.2.3.1 | Yes_ No_ X_ S_ |
| 3.24.43 | If the combination of Broadband bearer capability, ATM traffic descriptor, End-to-end transit delay, and Extended QoS parameters information elements contain a non-supported set of parameters, is a RELEASE COMPLETE message with cause #73 and crankback cause #73 sent? | | M | 6.5.2.3.2 | Yes_ No_ X_ S_ |
| 3.24.44 | If the succeeding side is not able to provide the indicated ATM traffic parameters, does it send a RELEASE COMPLETE message with cause and crankback cause #37? | | M | 6.5.2.3.3 | Yes_ No_ X_ S_ |
| 3.24.45 | If both the Minimum acceptable ATM traffic descriptor and the Alternative ATM traffic descriptor information elements are present in a SETUP message, is the connection request rejected with cause #73 and no crankback? | | M | 6.5.2.3.4 | Yes_ No_ X_ S_ |
| 3.24.46 | If the Alternative ATM traffic descriptor information element is not coded as one of the allowed combinations, is the information element treated as a non-mandatory information element with content error? | | M | 6.5.2.3.4 | Yes_ No_ X_ S_ |
| 3.24.47 | If the Minimum ATM traffic descriptor information element is not coded as one of the allowed combinations, is the information element treated as a non-mandatory information element with content error? | | M | 6.5.2.3.4 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.48 | If the IUT cannot support the traffic parameters specified in the ATM traffic descriptor information element and cannot support the traffic parameter values in the Alternative ATM traffic descriptor information element or the Minimum acceptable ATM traffic descriptor information element, is the connection establishment rejected with cause #37 and a Crankback information element with a corresponding Crankback cause code? | | M | 6.5.2.3.4 | Yes_ No_ X_ S_ |
| 3.24.49 | If there is no Extended QoS Parameters information element in the received SETUP message, does the preceding side generate an Extended QoS Parameters information element? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.50 | If there is no End-to-end transit delay information element in the received SETUP message, does the preceding side generate an End-to-end transit delay information element? | | O | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.51 | For each parameter contained in the Extended QoS parameters information element, does the preceding side increment the forward cumulative values of that parameter? (Note 1) | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.52 | For each parameter contained in the Extended QoS parameters information element, does the preceding side determine if the highest/lowest acceptable values of that parameter can be supported? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.53 | For each parameter contained in the End-to-end transit delay information element, does the preceding side increment the forward cumulative values of that parameter? (Note 1) | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.54 | For each parameter contained in the End-to-end transit delay information element, does the preceding side determine if the highest/lowest acceptable values of that parameter can be supported? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.55 | Does the succeeding side not use the Quality of Service Parameters information element and pass it on? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.56 | For each parameter contained in the Extended QoS parameters information element, does the succeeding side increment the backward cumulative values of that parameter? (Note 2) | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.57 | For each parameter contained in the Extended QoS parameters information element, does the succeeding side determine if the highest/lowest acceptable values of that parameter can be supported? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.58 | For each parameter contained in the End-to-end transit delay information element, does the succeeding side increment the backward cumulative values of that parameter? (Note 2) | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.59 | For each parameter contained in the End-to-end transit delay information element, does the succeeding side determine if the highest/lowest acceptable values of that parameter can be supported? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.60 | If the Extended QoS parameters information element contains a non-supported set of individual QoS parameters, does it return a RELEASE COMPLETE message with cause #49? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.61 | If the End-to-end transit delay information element contains a non-supported set of individual parameters, does it return a RELEASE COMPLETE message with cause #49? | | M | 6.5.2.3.5 | Yes_ No_ X_ S_ |
| 3.24.62 | Does the succeeding side adjust the Cumulative ABR RM fixed round trip time parameter in the ABR setup parameters information element? | | M | 6.5.2.3.7 | Yes_ No_ X_ S_ |
| 3.24.63 | Does the succeeding side send a CALL PROCEEDING message to the preceding side to acknowledge the SETUP message? | | M | 6.5.2.4, 5.5.4.1.10 | Yes_ No_ X_ S_ |
| 3.24.64 | Does the succeeding side enter the Call Proceeding Sent state after sending the CALL PROCEEDING message? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.65 | On receipt of a CALL PROCEEDING message is timer T303 stopped? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.66 | On receipt of a CALL PROCEEDING message is timer T310 started? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.67 | On receipt of a CALL PROCEEDING message is the Call Proceeding Received state entered? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.68 | If a CONNECT, ALERTING, or a RELEASE message is not received prior to the expiration of timer T310, are clearing procedures initiated towards the originating interface with cause #102? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.69 | If a CONNECT, ALERTING, or a RELEASE message is not received prior to the expiration of timer T310, are clearing procedures initiated in the called party's direction with cause #102? | | M | 6.5.2.4 | Yes_ No_ X_ S_ |
| 3.24.70 | When the succeeding side receives an indication that the called party is alerting, does it send an ALERTING message to the preceding side? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.71 | When the succeeding side receives an indication that the called party is alerting, does it enter the Alerting Delivered state? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |
| 3.24.72 | When an ALERTING message is received is timer T310 stopped? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |
| 3.24.73 | When an ALERTING message is received is timer T301 started? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |
| 3.24.74 | When an ALERTING message is received is the Alerting Received state entered? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |
| 3.24.75 | When an ALERTING message is received is an alerting indication sent towards the calling user? | | M | 6.5.2.5 | Yes_ No_ X_ S_ |
| 3.24.76 | Upon receiving an indication from Call Control that the call has been accepted, is a CONNECT message sent? | | M | 6.5.2.6 | Yes_ No_ X_ S_ |
| 3.24.77 | Upon receiving an indication from Call Control that the call has been accepted, is the Active state entered? | | M | 6.5.2.6 | Yes_ No_ X_ S_ |
| 3.24.78 | On receipt of a CONNECT message, does the preceding side stop timer T310, if it is running? | | M | 6.5.2.6 | Yes_ No_ X_ S_ |
| 3.24.79 | On receipt of a CONNECT message, does the preceding side stop timer T301, if it is running? | | M | 6.5.2.6 | Yes_ No_ X_ S_ |
| 3.24.80 | On receipt of a CONNECT message, does the preceding side enter the Active state? | | M | 6.5.2.6 | Yes_ No_ X_ S_ |
| 3.24.81 | If the succeeding side determines that the requested service is not available, is crankback initiated? | | M | 6.5.2.7 | Yes_ No_ X_ S_ |
| 3.24.82 | If the succeeding side determines that it is not able to progress the call, is crankback initiated? | | M | 6.5.2.7 | Yes_ No_ X_ S_ |
| 3.24.83 | Does the preceding (succeeding) side initiate call clearing by sending a RELEASE message? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.84 | Does the preceding (succeeding) side initiate call clearing by starting timer T308? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.85 | Does the preceding (succeeding) side initiate call clearing by releasing the virtual channel? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.86 | Does the preceding (succeeding) side initiate call clearing by entering the Release Request state? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.87 | While not in the Null or clearing states does the succeeding (preceding) side enter the Release Indication state upon receipt of a RELEASE message? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.88 | While in the Release Indication state, does the succeeding (preceding) side send a RELEASE COMPLETE message once the virtual channel used for the call has been released? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.89 | Once the RELEASE COMPLETE message has been sent, does the succeeding (preceding) side release both the call reference and the virtual channel? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.90 | Once the RELEASE COMPLETE message has been sent, does the succeeding (preceding) side enter the Null state? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.91 | On receipt of the RELEASE COMPLETE message does the preceding (succeeding) side stop timer T308, if it is running? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.92 | On receipt of the RELEASE COMPLETE message does the preceding (succeeding) side release the virtual channel and the call reference? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.93 | On receipt of the RELEASE COMPLETE message does the preceding (succeeding) side enter the Null state? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.94 | If timer T308 expires for the first time, does the preceding (succeeding) side retransmit a RELEASE message with the cause value in the original RELEASE message? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.95 | If timer T308 expires for the first time, does the preceding (succeeding) side restart timer T308? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.96 | If timer T308 expires for the first time, does the preceding (succeeding) side stay in the Release Request state? | | M | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.97 | If timer T308 expires for the first time, does the preceding (succeeding) side retransmit a RELEASE message with a second cause IE with cause #102? | | O | 6.5.3.3 | Yes_ No_ X_ S_ |
| 3.24.98 | If no RELEASE or RELEASE COMPLETE message is received before the second expiry of timer T308, is the call reference released? | | M | 6.5.3.3, 6.5.3.4 | Yes_ No_ X_ S_ |
| 3.24.99 | If no RELEASE or RELEASE COMPLETE message is received before the second expiry of timer T308, is the Null state entered? | | M | 6.5.3.3, 6.5.3.4 | Yes_ No_ X_ S_ |
| 3.24.100 | If no RELEASE or RELEASE COMPLETE message is received before the second expiry of timer T308, are additional recovery procedures performed? | | O | 6.5.3.3, 6.5.3.4 | Yes_ No_ X_ S_ |
| 3.24.101 | If a RELEASE message is received while in the Release Request state is timer T308 stopped? | | M | 6.5.3.4 | Yes_ No_ X_ S_ |
| 3.24.102 | If a RELEASE message is received while in the Release Request state are the call reference and virtual channel released? | | M | 6.5.3.4 | Yes_ No_ X_ S_ |
| 3.24.103 | If a RELEASE message is received while in the Release Request state is the Null state entered? | | M | 6.5.3.4 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.104 | When call/connection collision occurs when the traffic parameters indicated exceed the remaining resources on the interface, is the call/connection cleared with cause #47? | | O.2 | 6.5.4 | Yes_ No_<br>X_ S_ |
| 3.24.105 | When call/connection collision occurs when the traffic parameters indicated exceed the remaining resources on the interface, is the call/connection cleared with cause #49? | | O.2 | 6.5.4 | Yes_ No_<br>X_ S_ |
| 3.24.106 | When call/connection collision occurs when the traffic parameters indicated exceed the remaining resources on the interface, is the call/connection cleared with cause #51? | | O.2 | 6.5.4 | Yes_ No_<br>X_ S_ |
| 3.24.107 | Does the preceding side implement the restart procedures? | | M | 6.5.5 | Yes_ No_<br>X_ S_ |
| 3.24.108 | Does the succeeding side implement the restart procedures? | | M | 6.5.5 | Yes_ No_<br>X_ S_ |
| 3.24.109 | When a restart collision occurs are the restart requests handled independently? | | M | 6.5.5.3 | Yes_ No_<br>X_ S_ |
| 3.24.110 | When a message is received with a protocol discriminator coded other than "PNNI signalling message", is that message ignored? | | M | 6.5.6.1 | Yes_ No_<br>X_ S_ |
| 3.24.111 | If the message compatibility instruction indicator is set to "message instruction field not significant" and whenever an unexpected message except, RELEASE, RELEASE COMPLETE, or an unrecognized message is received in any state other than the Null state, then is a STATUS message returned with cause #97? | | O.3 | 6.5.6.4 | Yes_ No_<br>X_ S_ |
| 3.24.112 | If the message compatibility instruction indicator is set to "message instruction field not significant" and whenever an unexpected message except, RELEASE, RELEASE COMPLETE, or an unrecognized message is received in any state other than the Null state, then is a STATUS message returned with cause #101? | | O.3 | 6.5.6.4 | Yes_ No_<br>X_ S_ |
| 3.24.113 | Whenever an unexpected RELEASE message is received, is<br>- the virtual channel released?<br>- the connection cleared?<br>- a RELEASE COMPLETE message sent?<br>- the call reference released?<br>- all timers stopped?<br>- the Null state entered?<br>- the PNNI Call Control informed? | | <br>M<br>M<br>M<br>M<br>M<br>M<br>M | 6.5.6.4 | X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.114 | Whenever an unexpected RELEASE COMPLETE message is received, is<br>- the virtual channel released?<br>- the connection cleared?<br>- the call reference released?<br>- all timers stopped?<br>- the Null state entered?<br>- the PNNI Call Control informed? | | <br><br>M<br>M<br>M<br>M<br>M<br>M | 6.5.6.4 | Yes_ No_<br>X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.24.115 | Whenever indication of a Signalling AAL reset is received from the SAAL by means of the AAL-ESTABLISH-INDICATION and calls are in the clearing phase, is no action taken? | | M | 6.5.6.9 | Yes_ No_<br>X_ S_ |
| 3.24.116 | Whenever indication of a Signalling AAL reset is received from the SAAL by means of the AAL-ESTABLISH-INDICATION and calls are in the establishment phase, are they maintained? | | M | 6.5.6.9 | Yes_ No_<br>X_ S_ |
| 3.24.117 | In addition to maintaining calls in the establishment phase, are status enquiry procedures implemented? | | O | 6.5.6.9 | Yes_ No_<br>X_ S_ |
| 3.24.118 | Whenever indication of a Signalling AAL reset is received from the SAAL by means of the AAL-ESTABLISH-INDICATION and calls are in the active state, are they maintained? | | M | 6.5.6.9 | Yes_ No_<br>X_ S_ |
| 3.24.119 | If timer T309 expires prior to SAAL re-establishment is<br>- the virtual channel released?<br>- the connection cleared?<br>- the call reference released?<br>- the Null state entered?<br>- the PNNI Call Control informed? | | <br>M<br>M<br>M<br>M<br>M | 6.5.6.10 | X_ S_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_<br>Yes_ No_ |
| 3.24.120 | To check the correctness of a call state, can a STATUS ENQUIRY message be sent? | | O | 6.5.6.11 | Yes_ No_<br>X_ S_ |
| 3.24.121 | If timer T322 expires and no STATUS message was received, is the STATUS ENQUIRY message retransmitted? | | O | 6.5.6.11 | Yes_ No_<br>X_ S_ |
| 3.24.122 | If the maximum number of retransmissions of the STATUS ENQUIRY message is reached, is the call cleared? | | M | 6.5.6.11 | Yes_ No_<br>X_ S_ |
| 3.24.123 | If the maximum number of retransmissions of the STATUS ENQUIRY message is reached, is the PNNI Call Control notified? | | M | 6.5.6.11 | Yes_ No_<br>X_ S_ |
| 3.24.124 | If the Progress indicator IE is included in the PROGRESS message and progress description is No. 1 are all supervisory timers stopped except for T301 and T322? | | M | 6.5.11 | Yes_ No_<br>X_ S_ |
| 3.24.125 | If the Progress indicator IE is included in the PROGRESS message and progress description is No. 2 are all supervisory timers stopped except for T301 and T322? | | M | 6.5.11 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| 3.24.126 | If the Progress indicator IE is included in the PROGRESS message and progress description is No. 4 are all supervisory timers stopped except for T301 and T322? | | O | 6.5.11 | Yes_ No_ X_ S_ |

COMMENTS

O.1 - The IUT must support at least one of these capabilities.
O.2 - The IUT must support at least one of these cause codes.
O.3 - The IUT must support at least one of these capabilities.

Note 1 - When the previous interface is not a PNNI, the backward cumulative value may also be incremented, depending on the interface type.
Note 2 - When the next interface is not a PNNI, the forward cumulative value may also be incremented, depending on the interface type.

**I.A Designated Transit Lists (Annex A)**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| A.1 | If a node removes DTLs from the stack, does it either not add DTLs to the stack or first remove the DTLs it added? | | M | Annex A, 7 | Yes_ No_ X_ S_ |
| A.2 | If the Transit network selection information element is present and the DTL originator does not find a path to the specified transit network, is the connection cleared with cause #2 "no route to specified transit network"? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.3 | If the DTL originator does not find a path to the called party and no Transit network selection information element is present, is the connection cleared with cause #3 "no route to destination"? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.4 | Are Designated transit list information elements pushed onto the stack in the reverse order in which they are to be traversed? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.5 | Does each Designated transit list information element contain, in the order which they are to be traversed, a list of transits at a single level of the hierarchy? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.6 | In the DTL stack appended to the SETUP or ADD PARTY message by the DTL originator, does the first Designated transit list information element to appear include the logical node that contains the DTL terminator? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.7 | In the DTL stack appended to the SETUP or ADD PARTY message by the DTL originator, does each Designated transit list information element contain as the first logical node to be traversed at that level, either the DTL originator? | | M | Annex A, 7.2.1 | Yes_ No_ X_ S_ |
| A.8 | In the DTL stack appended to the SETUP or ADD PARTY message by the DTL originator, is the current transit pointer set to zero in all Designated transit list information elements except for the top Designated transit list information element on the stack? | | M | Annex A, 7.2.1, 7.3 | Yes_ No_ X_ S_ |
| A.9 | In the top Designated transit list information element in the DTL stack received by the entry border node, if the logical node identifier indicated by the current transit pointer is not the same as the node ID of the border node's ancestor at the level of the common peer group for the receiving link, is the call cleared with cause #41 "temporary failure"? | SS_B<br>NOT SS_B | M<br>N/A | Annex A, 7.2.2 | Yes_ No_ X_ S_ |
| A.10 | Is the call cranked back with blocked transit type "call or party has been blocked at the succeeding end of this interface" and crankback cause #128 "next node unreachable"? | SS_B<br>NOT SS_B | O<br>N/A | Annex A, 7.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| A.11 | Is the call cranked back with crankback cause #160 "DTL transit not my node ID" and the DTL transit listed as the blocked node? | SS_B<br><br>NOT SS_B | O<br><br>N/A | Annex A, 7.2.2 | Yes_ No_<br>X_ S_ |
| A.12 | If one or more Designated transit list information elements is appended to the DTL stack by the entry border node, do these information elements specify a path to the target determined according to steps (a) and (b) of Section 7.2.2? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.2.2 | Yes_ No_<br>X_ S_ |
| A.13 | Is this path consistent with all logical port identifiers indicated by the current transit pointers in Designated transit list information elements in the received DTL stack? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.2.2 | Yes_ No_<br>X_ S_ |
| A.14 | If the entry border node cannot find a path to the target determined according to steps (a) and (b) of Section 7.2.2, is the call cleared or cranked back with the appropriate cause, as determined according to the procedures of Section 8.2.1? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.2.2 | Yes_ No_<br>X_ S_ |
| A.15 | In the top Designated transit list information element in the DTL stack received by the node that is not the DTL originator or an entry border node, if the node identifier indicated by the current transit pointer is not the same as that node's own node identifier, is the call cleared with cause #41 "temporary failure"? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.2.3 | Yes_ No_<br>X_ S_ |
| A.16 | Is the call cranked back with blocked transit type "call or party has been blocked at the succeeding end of this interface" and crankback cause #128 "next node unreachable"? | | O | Annex A, 7.2.3 | Yes_ No_<br>X_ S_ |
| A.17 | Is the call cranked back with crankback cause #160 "DTL transit not my node ID" and the DTL transit listed as the blocked node? | | O | Annex A, 7.2.3 | Yes_ No_<br>X_ S_ |
| A.18 | If the current transit pointer in the top Designated transit list information element on the received DTL stack does not point to the last transit in the DTL information element and the call is progressed with no additional DTL information elements appended to the DTL stack by this node, is the current transit pointer advanced to the next transit? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.19 | Is the call progressed using the logical port specified by the current transit pointer in the top Designated transit list information element on the received DTL stack? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| A.20 | If the current transit pointer in the top Designated transit list information element on the DTL stack received by a node that is not the DTL originator or an entry border node does not point to the last transit in the DTL information element, and either<br>(i) the next transit is not a neighbor, or<br>(ii) the specified logical port does not correspond to a logical link to the next transit,<br>is the call cranked back with crankback cause #128 and cause #2 or cause #3? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.21 | If the current transit pointer in the top Designated transit list information element on the received DTL stack indicates the last transit in the DTL information element and the call is progressed with no additional DTL information elements appended to the DTL stack by this node, are one or more Designated transit list information elements popped from the stack according to the procedures of Section 7.3? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.22 | If there are any DTLs remaining on the DTL stack, is the current transit pointer in the top Designated transit list information element advanced to the next transit? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.23 | Is the call progressed to the next transit using a port that is consistent with all logical port identifiers indicated by the current transit pointers in Designated transit list information elements in the received DTL stack? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.24 | If the current transit pointers in all Designated transit list information elements on the DTL stack received by a node that is not the DTL originator or an entry border node indicate the last transit in the DTL information element, but there is no connectivity with sufficient membership scope to the called party or transit network, is the call cleared or cranked back according to the procedures of Section 8.2.1? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.25 | If the current transit pointers in all Designated transit list information elements on the DTL stack received by a node that is not the DTL originator or an entry border node indicate the last transit in the DTL information element, and the call is progressed, is a port used that is consistent with the port ID specified by the current transit pointer in the top DTL of the received DTL stack? | | M | Annex A, 7.3 | Yes_ No_<br>X_ S_ |
| A.26 | When DTLs are pushed onto the DTL stack, are port IDs left unspecified whenever the next node in the DTL stack is represented in the topology database using the simple node representation or the default node representation? | | O | Annex A, 7.4 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| A.27 | When DTLs are pushed onto the DTL stack, are port Ids specified whenever the next node in the DTL stack is represented using the complex node representation with one or more exceptions? | | O | Annex A, 7.4 | Yes_ No_ X_ S_ |

**I.B Crankback Procedures (Annex B)**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.1 | Is crankback performed only where stated explicitly in the PNNI v1.0 specification? | | M | Annex B, 8.1 | Yes_ No_ X_ S_ |
| B.2 | When a call progresses all the way to the called user and gets rejected by the called user, is the call cleared all the way back to the calling user and not cranked back? | | M | Annex B, 8.1 | Yes_ No_ X_ S_ |
| B.3 | Are calls that get rejected when the DTL terminator determines that the UNI to the called user cannot carry the call cranked back? | | O | Annex B, 8.2 | Yes_ No_ X_ S_ |
| B.4 | Whenever crankback occurs due to reachability errors, is the blocked transit specified in the Crankback information element a blocked link? | | M | Annex B, 8.2.1 | Yes_ No_ X_ S_ |
| B.5 | For unreachable transit networks and called party addresses, is the Blocked link's succeeding node ID set to all zeros? | | M | Annex B, 8.2.1 | Yes_ No_ X_ S_ |
| B.6 | When the node receives a SETUP or ADD PARTY message with a DTL stack indicating that it is the last node in the path, but no reachability information exists in the node's topology database to the called party or transit network, is the call cleared with cause #2 "no route to specified transit network" or cause #3 "no route to destination"? | | M | Annex B, 8.2.1.1 | Yes_ No_ X_ S_ |
| B.7 | When the node receives a SETUP or ADD PARTY message with a DTL stack indicating that it is the last node in the path, and the node's topology database includes reachability information for the called party or transit network, but only at one or more different nodes (that are not ancestors of this node), is the call cranked back with cause and crankback cause #2 or #3? | | M | Annex B, 8.2.1.1 | Yes_ No_ X_ S_ |
| B.8 | When the next transit in the DTL stack is not directly reachable from this node and a Transit network selection information element is present, is the call cranked back with crankback cause #128 "next node unreachable" and cause #2 "no route to specified transit network"? | | M | Annex B, 8.2.1.2 | Yes_ No_ X_ S_ |
| B.9 | When the next transit in the DTL stack is not directly reachable from this node and no Transit network selection information element is present, is the call cranked back with crankback cause #128 "next node unreachable" and cause #3 "no route to destination"? | | M | Annex B, 8.2.1.2 | Yes_ No_ X_ S_ |
| B.10 | Are calls that are rejected in PNNI domains due to insufficient resources always cranked back? | | M | Annex B, 8.2.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.11 | If the requested user cell rate(s) from the ATM traffic descriptor information element cannot be satisfied, is the call cranked back with crankback cause #37 "user cell rate not available"? | | M | Annex B, 8.2.2.2 | Yes_ No_ X_ S_ |
| B.12 | If no path can be found to satisfy the requested maximum CTD, peak-to-peak CDV, and/or CLR (in one and/or the other direction for the call), is the call cranked back with cause and crankback cause #49 "QoS unavailable? | | M | Annex B, 8.2.2.2 | Yes_ No_ X_ S_ |
| B.13 | Are the specific QoS parameter(s) that caused the call rejection indicated in the diagnostics by setting the appropriate bits to "CTD unavailable", "CDV unavailable", and/or "CLR unavailable"? | | M | Annex B, 8.2.2.2 | Yes_ No_ X_ S_ |
| B.14 | When blocking due to insufficient resources occurs, are the procedures of Section 8.3.1.1, 8.3.1.2, or 8.3.1.3 applied? | | M | Annex B, 8.2.2.2 | Yes_ No_ X_ S_ |
| B.15 | When the preceding side is unable to allocate a VPCI (for SVPs) or a VPCI/VCI pair (for SVCs), are the procedures of Section 8.3.1.2 followed? | | M | Annex B, 8.2.2.3 | Yes_ No_ X_ S_ |
| B.16 | When the preceding side is unable to allocate a VPCI (for SVPs) or a VPCI/VCI pair (for SVCs) and no alternate routing is attempted or alternate routing fails, is the call cranked back with crankback cause #45 "No VPCI/VCI available"? | | M | Annex B, 8.2.2.3 | Yes_ No_ X_ S_ |
| B.17 | Whenever VPCI/VCI resource errors occur at the succeeding side of a PNNI interface, is the blocked transit type in the Crankback information element set to "call or party has been blocked at the succeeding end of this interface"? | | M | Annex B, 8.2.2.3 | Yes_ No_ X_ S_ |
| B.18 | When cranking back due to blocking at the node, does the Crankback information element include a crankback level subfield whose value is set to the level of the first node ID indicated in the top DTL of the stack? | | M | Annex B, 8.3.1.1, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.19 | Is the blocked transit type set to "blocked node" and does the blocked transit identifier indicate the node's own node ID at the corresponding level of hierarchy, as indicated by the current transit pointer in the top DTL on the stack in the received SETUP or ADD PARTY message? | | M | Annex B, 8.3.1.1, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.20 | When cranking back due to blocking at the preceding end of a link, does the Crankback information element include a crankback level subfield whose value is set to the level of the first node ID indicated in the top DTL of the stack? | | M | Annex B, 8.3.1.2, 8.3.2.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.21 | Is the blocked transit type set to "blocked link" and the blocked link's preceding node identifier and port identifier set to the node and port IDs indicated by the current transit pointer in the top DTL of the stack in the received SETUP or ADD PARTY message? | | M | Annex B, 8.3.1.2, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.22 | If the node is not the last node in the top DTL on the stack, is the blocked link's succeeding node identifier set to the next node ID in the top DTL on the stack? | | M | Annex B, 8.3.1.2, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.23 | If the node is an exit border node for the call, is the blocked link's succeeding node identifier set to the next node determined from the received DTL stack according to the procedures of Section 7.3? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.3.1.2, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.24 | If the node is the DTL terminator for the call, is the blocked link's succeeding node identifier set to all zeros? | | M | Annex B, 8.3.1.2, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.25 | When cranking back due to blocking at the succeeding end of a link, does the Crankback information element include a crankback level subfield whose value is set to the level of the first node ID indicated in the top DTL of the stack? | | M | Annex B, 8.3.1.3 | Yes_ No_ X_ S_ |
| B.26 | When a clearing message including a Crankback information element with blocked transit type other than "call or party has been blocked at the succeeding end of this interface" is received and the node did not generate any DTLs for this call of equal or higher level than the crankback level, does the node crankback the call or party by sending a RELEASE or ADD PARTY REJECT message including an unchanged Crankback information element over its previous interface (towards the calling party)? | | M | Annex B, 8.3.2 | Yes_ No_ X_ S_ |
| B.27 | hen a clearing message including a Crankback information element with blocked transit type "call or party has been blocked at the succeeding end of this interface" is received by the node that is not an entry border node for the call, and other links exist that still satisfy the DTLs in the SETUP or ADD PARTY message received by this node, is alternate routing attempted? | OPT_2<br><br>NOT OPT_2 | O<br><br>N/A | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.28 | If the crankback cause was #35 "Requested VPCI/VCI not available", is the SETUP message resent on the blocked link with a different VPCI (for SVPs) or VPCI/VCI pair (for SVCs)? | | O | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.29 | If no alternate routing is attempted or if alternate routing fails, does the node continue to crankback the call or party with a crankback level subfield whose value is set to the level of the first node ID indicated in the top DTL of the received DTL stack? | | M | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.30 | Is the blocked transit type set to "blocked link" and the blocked link's preceding node identifier and port identifier set to the node and port IDs indicated by the current transit pointer in the top DTL of the stack in the received SETUP or ADD PARTY message? | | M | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.31 | If the node is not the last node in the top DTL on the stack, is the blocked link's succeeding node identifier set to the next node ID in the top DTL on the stack? | | M | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.32 | If the node is an exit border node for the call, is the blocked link's succeeding node identifier set to the next node determined from the received DTL stack according to the procedures of Section 7.3? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.33 | If the node is the DTL terminator for the call, is the blocked link's succeeding node identifier set to all zeros? | | M | Annex B, 8.3.2.1 | Yes_ No_ X_ S_ |
| B.34 | When a clearing message including a Crankback information element with either blocked transit type "call or party has been blocked at the succeeding end of this interface" or crankback level lower than or equal to the highest level DTL generated by this node for this call is received by the entry border node or DTL originator, is alternate routing attempted? | OPT_2<br><br>NOT OPT_2 | O<br><br>N/A | Annex B, 8.3.2, 8.3.2.1, 8.3.2.2 | Yes_ No_ X_ S_ |
| B.35 | If alternate routing is attempted, is the path consistent with the DTLs in the originally received SETUP or ADD PARTY message? | SS_B and OPT_2<br>NOT (SS_B and OPT_2) | M<br><br>N/A | Annex B, 8.3.2.2.1 | Yes_ No_ X_ S_ |
| B.36 | If alternate routing is attempted, does the path avoid all blocked nodes and/or links received in the Crankback information element of any clearing messages? | OPT_2<br><br>NOT OPT_2 | M<br><br>N/A | Annex B, 8.3.2.2.1 | Yes_ No_ X_ S_ |
| B.37 | If alternate routing is not attempted or if alternate routing fails, does crankback proceed with the crankback level set to the level of the first node in the top DTL on the stack and the identity of the blocked node or link changed to reflect a node or link known to the parent peer group? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.38 | If only nodes and/or links internal to the peer group were returned as blocked nodes or links in the Crankback information element, is the logical group node corresponding to the peer group listed as blocked? | SS_B<br><br>NOT SS_B | O<br><br>N/A | Annex B, 8.3.2.2.2 | Yes_ No_ X_ S_ |
| B.39 | If at least one of the routing attempts was blocked at a link exiting the peer group, is the logical link exiting the logical group node representing the peer group listed as blocked? | SS_B<br><br>NOT SS_B | O<br><br>N/A | Annex B, 8.3.2.2.2 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.40 ‡ | If the network node receives a RELEASE or RELEASE COMPLETE message with a Crankback information element indicating blocked transit type "call or party has been blocked at the succeeding end of this interface" and there are pending add party requests on the add party queue, for each queued add party request does the node either (i) send an ADD PARTY REJECT message towards the preceding network node, or (ii) reroute the add party request so as to avoid this interface? | | M | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.41 ‡ | If the network node receives a RELEASE or RELEASE COMPLETE message with a Crankback information element indicating blocked transit type other than "call or party has been blocked at the succeeding end of this interface" and there are pending add party requests on the add party queue, does the network node progress one of the add party requests on the add party queue by sending a SETUP message, leaving the remaining add party requests pending? | | O.1 | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.42 ‡ | If the network node receives a RELEASE or RELEASE COMPLETE message with a Crankback information element indicating blocked transit type other than "call or party has been blocked at the succeeding end of this interface" and there are pending add party requests on the add party queue, does the network node crankback or reroute each add party request on the add party queue whose DTL stack contains the blocked transit, and progress one of the add party requests remaining on the add party queue (if any) by sending a SETUP message, leaving the remaining add party requests pending? | | O.1 | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.43 ‡ | If an add party request is rerouted to a branch in the Active state, is an ADD PARTY message sent to the corresponding succeeding node? | | M | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.44 ‡ | If an add party request is rerouted to a branch that is in the Null state, is a SETUP message sent to the corresponding succeeding node? | | M | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.45 ‡ | If an add party request is rerouted to a branch in the Call Initiated, Outgoing Call Proceeding, or Call Delivered State, is the add party request queued? | | M | Annex B, 8.3.2.3 | Yes_ No_ X_ S_ |
| B.46 | Are updated GCAC parameter values included as diagnostics for crankback cause #37 "user cell rate not available"? | | O | Annex B, 8.4 | Yes_ No_ X_ S_ |

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| B.47 | When the preceding node receives a call clearing message including a Crankback information element with blocked transit type "call or party has been blocked at the succeeding end of this interface" and containing updated GCAC parameter values with the direction set to "backward", and the port is not aggregated into another logical port by this node, is a port ID inserted that identifies its port for the PNNI interface? | | M | Annex B, 8.4 | Yes_ No_ X_ S_ |
| B.48 | When the exit border node receives a call clearing message including a Crankback information element with blocked transit type "call or party has been blocked at the succeeding end of this interface" and containing updated GCAC parameter values and the specified port is aggregated into another logical port by this node, are the updated parameter values and port ID either replaced with values for the aggregate link or discarded? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.4 | Yes_ No_ X_ S_ |
| B.49 | When the entry border node receives a call clearing message including a Crankback information element containing updated GCAC parameter values, the call is cranked back to a new level of hierarchy, and the specified port is not aggregated into another logical port at the new level of hierarchy, is the port ID included with the updated topology state parameter values updated? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.4 | Yes_ No_ X_ S_ |
| B.50 | When the entry border node receives a call clearing message including a Crankback information element containing updated GCAC parameter values, the call is cranked back to a new level of hierarchy, and the specified port is aggregated into another logical port at the new level of hierarchy, are the updated parameter values and port ID either replaced with values for the aggregate link or discarded? | SS_B<br><br>NOT SS_B | M<br><br>N/A | Annex B, 8.4 | Yes_ No_ X_ S_ |
| COMMENTS<br><br>O.1 - At least one of these must be supported | | | | | |

**I.C Soft PVC Procedures (Annex C)**

| Item | Protocol Feature<br><br>When supporting Soft PVC (OPT_7) and this call is a SPVC call ... | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| C.1 | are the following information elements:<br>- AAL parameters,<br>- Broadband high layer information,<br>- Broadband low layer information,<br>- Called party subaddress, and<br>- Calling party subaddress,<br>not included in the following messages:<br>- SETUP,<br>- CONNECT,<br>- ADD PARTY, and<br>- ADD PARTY ACK? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.1 | Yes_ No_<br>X_ S_ |
| C.2 | are the following specific parameters not negotiable:<br>- traffic parameters and<br>- QoS parameters? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2 | Yes_ No_<br>X_ S_ |
| C.3 | if the traffic parameters or QoS parameters as specified in the SETUP message cannot be supported by the switching system, is the call cranked back with cause and crankback cause #47, "Resources not available, unspecified"? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2 | Yes_ No_<br>X_ S_ |
| C.4 | does the owner of the PVPC/PVCC connecting point initiate PVPC/PVCC establishment? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1 | Yes_ No_<br>X_ S_ |
| C.5 | is a SETUP message sent when the PVPC/PVCC is initially configured? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1 | Yes_ No_<br>X_ S_ |
| C.6 | is a SETUP message sent when the switching node which is owner of the PVPC/PVCC becomes operational (e.g., power up)? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1 | Yes_ No_<br>X_ S_ |
| C.7 | is a SETUP message sent when recovering from an outage? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1 | Yes_ No_<br>X_ S_ |
| C.8 | is a Bearer class of VP included in the Broadband bearer capability IE for a VPC? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1 | Yes_ No_<br>X_ S_ |
| C.9 | is a Bearer class of X included in the Broadband bearer capability IE for a VCC? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1, 9.3.2 | Yes_ No_<br>X_ S_ |
| C.10 | is the Called party soft PVPC/VPCC information element included in the SETUP message? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1, 9.3.2 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature<br><br>When supporting Soft PVC (OPT_7) and this call is a SPVC call ... | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| C.11 | does the Called party number information element contain the configured peer PVPC/PVCC connecting point identifier? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1, 9.3.2 | Yes_ No_<br>X_ S_ |
| C.12 | does the Calling party number information element contain the PVPC/PVCC connecting point's own identifier? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.1, 9.3.2 | Yes_ No_<br>X_ S_ |
| C.13 | when the originating node receives a CONNECT message, does it put the PVPC/PVCC in an operational state? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.2 | Yes_ No_<br>X_ S_ |
| C.14 | if the CONNECT message contains the Called party soft PVPC/PVCC information element, is the VPI or VPI/VCI values of the PVPC/PVCC segment between the called connecting point and the user passed to the management entity? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.2 | Yes_ No_<br>X_ S_ |
| C.15 | when a SETUP message is received at the called NI are the procedures of sections 6.5.2.4 and 6.5.2.6 followed? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.3 | Yes_ No_<br>X_ S_ |
| C.16 | for the last PVPC segment does the calling connecting point indicate for the called endpoint of soft PVPC either any VPI or required VPI? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.3.1 | Yes_ No_<br>X_ S_ |
| C.17 | if the received VPI is set to required and is not available, is a RELEASE COMPLETE message with cause #34, "requested called party soft PVPC/PVCC not available sent? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.3.1 | Yes_ No_<br>X_ S_ |
| C.18 | for the last PVCC segment does the calling connecting point indicate for the called endpoint of soft PVPC either<br>- any VPI; any VCI or<br>- Required VPI; required VCI? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.3.2 | Yes_ No_<br>X_ S_ |
| C.19 | if the received VPI/VCI is set to required and is not available, is a RELEASE COMPLETE message with cause #34, "requested called party soft PVPC/PVCC not available sent? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.2.3.2 | Yes_ No_<br>X_ S_ |

**I.C Soft PVC Point-to-Multipoint Procedures**

| Item | Protocol Feature<br><br>When supporting Soft PVC (OPT_7) and this call is a SPVC call for point-to-multipoint PVCCs ... | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| C.20 | is the connection established for a point-to-multipoint PVCC initiated by the root connecting point? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.1 | Yes_ No_<br>X_ S_ |
| C.21 | is a SETUP/ADD PARTY message sent to one of the leaf connecting points when any of the following occurs:<br>- PVCC initially configured,<br>- a new party added by network management,<br>- when the switching node which is the root connecting point becomes operational (e.g., power up), or<br>- during recovery from an outage? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.1 | Yes_ No_<br>X_ S_ |
| C.22 | is the set up of the first party of the point-to-multi point PVCC always initiated by sending a SETUP message? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.2 | Yes_ No_<br>X_ S_ |
| C.23 | when the originating node receives a CONNECT message, does it put the PVPC/PVCC in an operational state? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.2.1, 9.2.2 | Yes_ No_<br>X_ S_ |
| C.24 | if the CONNECT message contains the Called party soft PVPC/PVCC information element, are the VPI/VCI values of the PVCC segment between the called connecting point and the user passed to the management entity? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.2.1, 9.2.2 | Yes_ No_<br>X_ S_ |
| C.25 | when a SETUP message received at the called NI are the procedures of sections 6.5.2.4 and 6.5.2.6 followed? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.2.2, 9.2.3 | Yes_ No_<br>X_ S_ |
| C.26 | after the connection is established to the first leaf, are connections established to additional leaves by sending an ADD PARTY message for each leaf? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3 | Yes_ No_<br>X_ S_ |
| C.27 | is the Called party soft PVPC/VPCC information element included in the ADD PARTY message? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3 | Yes_ No_<br>X_ S_ |
| C.28 | does the Called party number information element in the ADD PARTY message contain the configured leaf PVCC connecting point identifier? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3 | Yes_ No_<br>X_ S_ |
| C.29 | does the Calling party number information element in the ADD PARTY message contain the root PVCC connecting point's own identifier? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3 | Yes_ No_<br>X_ S_ |

| Item | Protocol Feature<br><br>When supporting Soft PVC (OPT_7) and this call is a SPVC call for point-to-multipoint PVCCs ... | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| C.30 | if the ADD PARTY ACKNOWLEDGE message contains the Called party soft PVPC/PVCC information element, are the VPI/VCI values of the PVCC segment between the called connecting point and the user passed to the management entity? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3.1 | Yes_ No_<br>X_ S_ |
| C.31 | when an ADD PARTY message is received at the called NI, are procedures of 6.6.2 followed? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3.2 | Yes_ No_<br>X_ S_ |
| C.32 | for the last PVCC segment does the calling connecting point indicate for the called endpoint of soft PVCC either<br>- any VPI; any VCI or<br>- required VPI; required VCI? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3.2.1 | Yes_ No_<br>X_ S_ |
| C.33 | if the received VPI/VCI is set to required and is not available, is an ADD PARTY REJECT message with cause #34, "requested called party soft PVPC/PVCC not available", sent? | OPT_7<br><br>NOT OPT_7 | M<br><br>N/A | Annex C, 9.3.3.2.1 | Yes_ No_<br>X_ S_ |

**I.NC Interoperability Questions**

| Item | Protocol Feature | Conditions for status | Status Pred. | Spec. Ref. | Support |
|---|---|---|---|---|---|
| NC1 | Does the address assignment of the IUT correspond to the topographical hierarchy? | | M | 5.2.1 | Yes_ No_ X_ S_ |
| NC2 | Does each node have a unique ATM address? | | M | 5.2.2 | Yes_ No_ X_ S_ |
| NC3 | Are the Peer Group identifiers prefixes of ATM End System addresses, which the organization that administers the peer group has assignment authority over that prefix? | | M | 5.3.2 | Yes_ No_ X_ S_ |
| NC4 | Is the opaque value unique within the entire routing domain? | | M | 5.3.3 | Yes_ No_ X_ S_ |
| NC5 | Can the ATM duplex links have different characteristics in each direction? | | M | 5.3.4 | Yes_ No_ X_ S_ |
| NC6 | If two lowest-level nodes are connected by a VPC which is to be used for PNNI, does each node know by configuration or management that the VPC exists and is used for PNNI? | | M | 5.4 | Yes_ No_ X_ S_ |
| NC7 | If the level indicator is set to zero, is the address advertised throughout the PNNI routing domain? | | M | 5.9.1 | Yes_ No_ X_ S_ |
| NC8 | Are peer group IDs specified at configuration time? | | M | 3.2.1 | Yes_ No_ X_ S_ |
| NC9 | Is the peer group ID at most 13 octets? | | M | 3.2.1 | Yes_ No_ X_ S_ |
| NC10 | Is preference for peer group leadership established through configuration? | | M | 5.10.1, 5.10.1.3 | Yes_ No_ X_ S_ |
| NC11 | Are all nodes configured to advertise a value less than MaxLeadership minus GroupLeaderIncrement? | | M | 5.10.1.2.2 | Yes_ No_ X_ S_ |
| NC12 | Is there at most one node selected in each peer group/partition to perform some functions of the LGN? | | M | 3.2.4, 5.11.1 | Yes_ No_ X_ S_ |
| NC13 | Does each node in the parent peer group have a unique node ID? | | M | 5.11.1 | Yes_ No_ X_ S_ |