The ATM Forum

Technical Committee

PNNI Addendum for SVCC-based RCC Diagnostic Test, Version 1.0

af-cs-0203.000

January 2005

Preface

During preparation of this addendum, the Control Signalling working group was chaired by Mickey Spiegel. The minutes at related working group meetings were recorded by Peter Roberts. The editor of this addendum was Peter Roberts. The editor would like to thank the following contributors for their help with this addendum as well as all participants of the Control Signalling working group for the many days and evenings spent discussing this addendum:

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This specification uses three levels for indicating the degree of compliance necessary for specific functions, procedures, or coding. They are indicated by the use of key words as follows:

Requirement: "Shall" indicates a required function, procedure, or coding necessary for compliance. The word "shall" used in text indicates a conditional requirement when the operation described is dependent on whether or not an objective or option is chosen.

Objective: "Should" indicates an objective which is not required for compliance, but which is considered desirable.

Option: "May" indicates an optional operation without implying a desirability of one operation over another. That is, it identifies an operation that is allowed while still maintaining compliance.

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1 Introduction

1.1 Overview

[INFORMATIVE]

The SVCC-based RCC diagnostic test ensures the stability of the PNNI control plane, particularly SVCC-based routing control channel (RCC) connections. These connections are set up between PNNI peer group leader (PGL) nodes (or logical nodes in higher level peer groups) in different peer groups (PG) to exchange information (e.g. routing, topology, and reachability information) between the groups. With the introduction of such features as Restricted Transit and Policy Routing in current PNNI networks, limitations and additional criteria are placed on routing and the establishment of connections. If an SVCC-based RCC connection were to be dropped, e.g. because of an equipment failure or maintenance action, these limitations might prevent the SVCC-based RCC connection from being re-created and thereby bringing down the PNNI control plane. Ensuring that SVCC-based RCC connections are not adversely affected by provisioning changes made to the network is very important to guaranteeing network reliability, availability, and serviceability.

The following Figures and descriptions provide an example of an SVCC-based RCC diagnostic test running between two PGs.

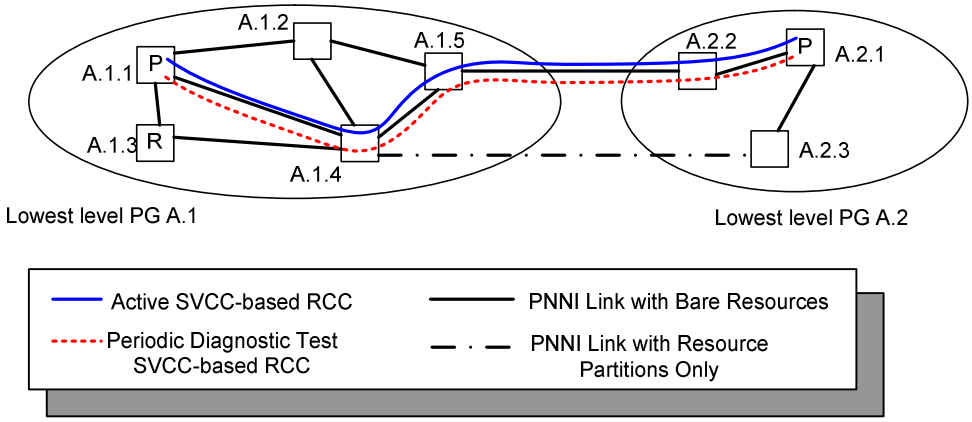

Figure 1 - SVCC-based RCC connection with SVCC diagnostic test connection

Figure 1 shows two peer groups at the first level of hierarchy. A node that contains the letter "P" is acting as the PGL for the peer group. A node that contains the letter "R" has been configured to be restricted transit (i.e. node A.1.2, and A.1.3). The figure also shows an SVCC-based RCC connection as a solid line. At periodic intervals (as configured by the operator), or on-demand, a test SVCC-based RCC connection is established and torn down immediately after establishment. This is used to verify that if the current SVCC-based RCC connection were to go down, that there is a very high probability it would reroute and take the same path as was used by the test SVCC-based RCC connection (note this may be different from the path used to originally establish the SVCC-based RCC). If creation of the test SVCC-based RCC connections fails then the network operator is alerted of the condition and no other action is taken. The operator would then have the opportunity to take actions to correct the situation. Such actions might include, changing configurations of the features that affected the test SVCC-based RCC or adding network capacity to provide additional alternate routes for the SVCC-based RCC. If creation of the test SVCC-based RCC connection is successful then the test connection is released immediately and no further action is performed since a path exists between the PGLs that can be used if the current SVCC-based RCC were to fail. Note

that the test SVCC-based RCC does not alter the state or use of the incumbent SVCC-based RCC connection.

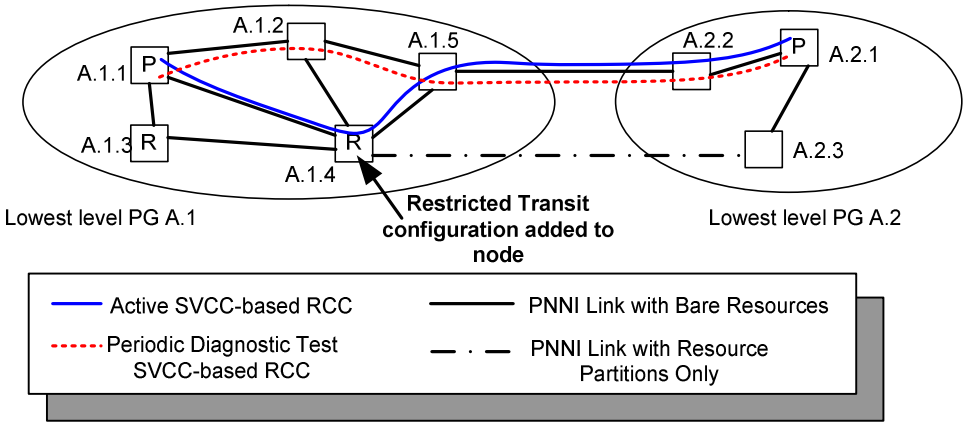

Figure 2 - SVCC-based RCC connection with new SVCC diagnostic test connection

Figure 2 shows a second test SVCC-based RCC connection, which is represented as a dotted line. This second test SVCC-based RCC connection circumvents the node A.1.4 after A.1.4 is configured as a restricted transit node. Note that the original SVCC-based RCC connection is not affected by configuring node A.1.4 as restricted transit. This second test SVCC-based RCC connection demonstrates that there is still a viable path between the PGLs for the SVCC-based RCC to establish even after node A.1.4 is configured as a restricted transit node.

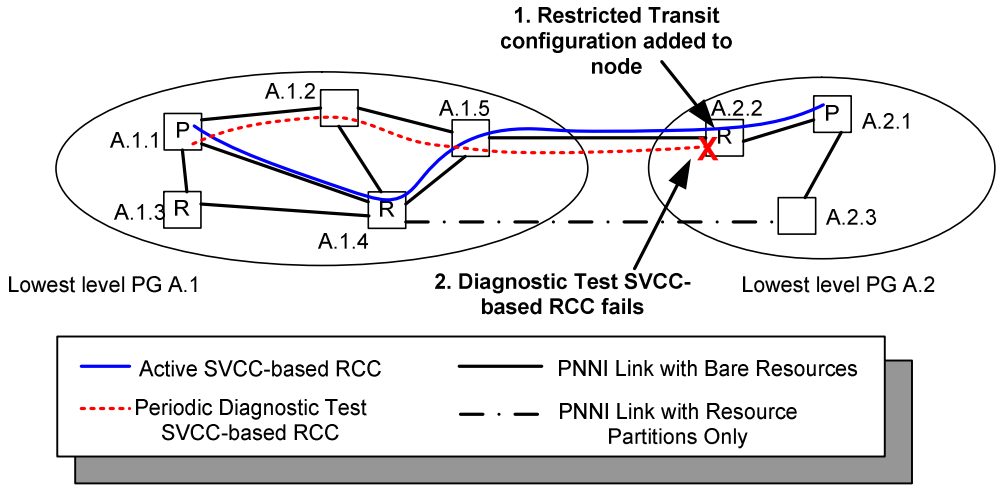

Figure 3 - SVCC-based RCC connection with failed SVCC diagnostic test connection

Figure 3 shows how the test SVCC-based RCC detects a potential problem with the current SVCC-based RCC if, for example, node A.2.2 were to be configured as a restricted transit node. Note that nodes in PG A.1 do not have knowledge that A.2.2 is configured as a restricted transit node and may therefore attempt to send calls over link A.1.5-A.2.2. Since there is now no available path between the PGLs, the test SVCC-based RCC fails at node A.2.2 because A.2.2 is now a restricted transit node (even though the current

SVCC-based RCC is up and undisturbed). Since the test SVCC-based RCC fails, the operator is notified of the condition on node A.1.1 (i.e. the PGL) and may take responsive action such as:

1) perform further investigations to analyze the failure, such as perform a Path Trace on the SVCC-based RCC diagnostic test setup attempt, or,
2) re-configure the network to remove the error condition, or,
3) build more alternate paths between these peer groups to allow the test SVCC-based RCC to succeed (and therefore, ensure the current SVCC-based RCC can be re-establish if it fails).

1.2 Scope

[NORMATIVE]

This document is an optional addendum to PNNI 1.1 [PNNI 1.1]. It contains the routing and signalling specification for SVCC-based RCC diagnostic test.

SVCC-based RCC diagnostic test is an optional feature of PNNI 1.1.

A device supporting SVCC-based RCC diagnostic tests shall support these procedures to periodically initiate a test SVCC-based RCC and then analyze the call establishment result. A device supporting SVCC-based RCC diagnostic tests shall support the procedures at all levels of hierarchy.

1.2.1 Support of SVCC-based RCC Diagnostic Test by PNNI 1.0 Nodes

A device supporting PNNI 1.0 may implement the functionality defined in this addendum by treating this addendum as if it were an optional addendum to PNNI 1.0 [PNNI 1.0], and PNNI 1.0 Errata and PICS [PNNI Err]. No new PNNI 1.1 features are required by SVCC-based RCC diagnostic test..

1.3 References

[NORMATIVE]

Only the specific versions of the following referenced documents and the specific versions of the documents referenced within these documents are applicable to this specification.

[PNNI 1.0] The ATM Forum Technical Committee, *Private Network-Network Interface Specification Version 1.0 (PNNI 1.0)*, af-pnni-0055.000, March 1996

[PNNI Err] The ATM Forum Technical Committee, PNNI v1.0 Errata and PICS, af-pnni-0081.000, May 1997

[PNNI 1.1] The ATM Forum Technical Committee, *Private Network-Network Interface Specification Version 1.1 (PNNI 1.1)*, af-pnni-0055.02, April 2002

1.4 Acronyms

[NORMATIVE]

ATM	Asynchronous Transfer Mode
DTL	Designated Transit List
LGN	Logical Group Node
PG	Peer Group
PGL	Peer Group Leader

PNNI	Private Network-to-Network Interface
RCC	Routing Control Channel
SVCC	Switched Virtual Channel Connection

2 Procedures

[NORMATIVE]

2.1 Architectural Variables

Add the following parameter to "Annex E: Architectural variables"[PNNI 1.1]

SVCCDiagnosticTestInterval: default 3600 seconds

The length of time in seconds an LGN waits between performing SVCC-based RCC diagnostic tests for its connected SVCC-based RCCs where it is the originator of the SVCC.

2.2 Changes to Establishment and Maintenance of SVCCs

Make the following changes to the section 5.5.6.3 of [PNNI 1.1]:

The following describes the mechanism executed by a particular logical group node, here called ThisLGN, for setting up SVCCs to neighboring LGNs of ThisLGN.

When an uplink advertisement containing upnode X has reached ThisPGL and is processed by ThisLGN (ThisPGL denotes the peer group leader of ThisLGN's child peer group):

A.1 If node X is at a higher level than the level of the peer group of ThisLGN, then announce an uplink to X by originating an appropriate PTSE in ThisLGN's peer group.

A.2 Otherwise, if ThisLGN has an SVCC open to node X, then do nothing.

A.3 Else, If ThisLGN's node ID is numerically smaller than the node ID of node X, then do nothing.

A.4 Else, if node X is at a lower level than ThisLGN's peer group, or is at the same level but is in a different peer group than ThisLGN, then an error condition has occurred and nothing should be done. Note that this error condition is likely to occur if ThisLGN's peer group has just changed, ThisPGL has just been elected, or ThisPGL's peer group has just healed a partition. Otherwise this should not occur and indicates an error in the border node advertising the uplink.

A.5 Else (X is in the same peer group as ThisLGN; there is no SVCC currently open to X, and ThisLGN has the numerically larger node ID): Start timer InitialLGNSVCTimer with value InitialLGNSVCTimeout. Note that this timer must be jittered. When this timer expires, open an inter-LGN SVCC to the ATM address of X.

A.6 If the SVCC setup attempt succeeds, then use the SVCC as a PNNI Routing Control Channel within ThisLGN's peer group (beginning with exchange of Hellos, and other defined PNNI protocols). If SVCC-based RCC diagnostic test is enabled and if ThisLGN's node ID is numerically larger than the neighboring LGNs node ID, start the SVCCDiagnosticTestTimer for ThisLGN if it is not already running.

When ThisLGN establishes the SVCC-based RCC, it is the DTL Originator and generates the first DTL:

DTL:[ThisLGN, Node X] pointer-1

The SETUP is then (logically) passed to ThisPGL and it generates the DTL to the border node.

DTL:[ThisPGL, ... BorderNode1] pointer-1

ThisPGL is then responsible for alternate routing when crankback occurs. Given the purpose of this SVCC, all practical routes should be attempted.

If the SVCC setup attempt fails, then start the RetryLGNSVCTimer timer with value RetryLGNSVCTimeout. Note that this timer must be jittered. If a successful SVCC arrives from the same peer LGN (X) while the timer is running, cancel the timer.

If ThisLGN detects the presence of two or more SVCCs to the same neighboring LGN then:

B.1 If ThisLGN's node ID is numerically larger than the neighboring LGNs node ID, then choose one SVCC to leave open. Close the other SVCC(s) with cause number 16 "normal call clearing".

If ThisPGL ceases to be PGL:

C.1 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.

C.2 ThisLGN clears the SVCCs to all of its neighboring LGNs by sending RELEASE messages with CAUSE IEs indicating cause number 53 "call cleared due to change in PGL".

If an existing SVCC to a neighboring LGN is closed:

D.1 Stop the SVCCDiagnosticTest Timer for ThisLGN if it was running.

~~D.1~~D.2 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 Section5.6.3.1), and the BadNeighbor event shall be triggered in all associated LGN horizontal link Hello FSMs (see Section 5.6.3.2). Start the RetryLGNSVCTimer with value RetryLGNSVCTimeout.

~~D.2~~D.3 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~~D.4 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~~D.5 Otherwise do nothing.

If the RetryLGNSVCTimer expires:

E.1. If the upnode X is still being advertised as the destination of uplinks originated by one or more border nodes, and if X is in the same peer group as ThisLGN, there is no SVCC currently open to X, and ThisLGN has the numerically larger node ID, then retry an SVCC setup to X and go to step A.6.

E.2. Otherwise do nothing.

Note: The failure of an SVCC between neighboring LGNs may be caused by failure of a single component internal to either of the neighboring peer groups. This does not necessarily imply any significant loss of connectivity between peer groups. Thus, if the SVCC fails this MUST NOT have any immediate effect on announcement of the corresponding higher level link between logical group nodes. Rather, there must be an attempt to re-establish the SVCC prior to changing the announced status of the link.

See Section 5.6.3 for further details.

Add the following two sections after 5.5.6.3 of [PNNI 1.1]:

5.5.6.4 Detailed Mechanisms for Performing an SVCC-based RCC Diagnostic Test

The following describes the mechanism executed by a particular logical group node, here called ThisLGN, for performing SVCC-based RCC diagnostic tests to neighboring LGNs of ThisLGN:

When an SVCCDiagnosticTestTimer expires for the inter-LGN SVCC to the neighboring LGN node X:

A.1 Open an inter-LGN SVCC to the ATM address of X. The Calling Party Number in the SETUP message shall be set to a unique value that does not equal the ATM address of any other LGN's to which node X is a neighboring peer. This unique Calling Party Number should be configured by the network operator. Construction of the DTLs and any alternate path selection shall be the same as for a normal SVCC-based RCCs as described in section 5.5.6.3.

A.2 If the SVCC setup attempt succeeds, then the SVCC-based RCC diagnostic test succeeded. Clear the SVCC-based RCC diagnostic test connection by sending RELEASE messages with cause number 16 "normal call clearing". If the SVCC-based RCC diagnostic test is enabled, then start the SVCCDiagnosticTestTimer timer with value SVCDiagnosticTestInterval.

If the SVCC diagnostic setup attempt fails, then an error should be logged to the network management system. If the SVCC-based RCC diagnostic test is enabled, start the SVCCDiagnosticTestTimer timer with value SVCCDiagnosticTestInterval.

If ThisPGL ceases to be PGL:

B.1 ThisLGN clears the SVCC diagnostic test connections in transit to all of its neighboring LGNs by sending RELEASE messages with cause number 16 "normal call clearing".

See Section 5.6.3 for further details.

5.5.6.5 SVCCDiagnosticTestTimer

At the calling node, the SVCCDiagnosticTestTimer is set when the SVCC becomes active and the SVCCDiagnosticTestInterval is set to a non-zero value (see section 5.5.6.3 and 5.5.6.4). The timer is disabled when the SVCC-based RCC between LGNs is not connected. A network operator may choose to perform an SVCC-based RCC test on-demand. This is accomplished by forcing the node to expire its SVCCDiagnosticTestTimer timer for the SVCC (see section 5.5.6.4).

At the called node, the SVCCDiagnostTestTimer is never set (see section 5.5.6.3 and 5.5.6.4). A network operator cannot perform an SVCC-based RCC diagnostic test on-demand from the called node for and SVCC.

Make the following changes to the section 5.6.3.1 of [PNNI 1.1]:

The protocol used to verify the communications link between two LGNs is very close to the protocol between lowest-level neighbors, and uses the same packet type. However, unlike lowest-level neighbor nodes, LGN neighbors will have a single PNNI routing control channel between them. This SVCC-based RCC is used for the exchange of all PNNI routing packets between the LGN neighbors, including PTSPs and other packets used to maintain database synchronization as well as Hellos. The Hello protocol used to monitor the status of the SVCC triggers the AddPort and DropPort events in the neighboring peer state machine that control database synchronization between the LGNs. This is similar to the relationship between the Hello protocol and the neighboring peer state machines run between lowest-level neighbors. The event AddPort in the neighboring peer state machine is triggered when the Hello state machine for the SVCC reaches the state 2-Way Inside. The event DropPort in the neighboring peer state machine is triggered when the Hello state machine for the SVCC falls out of the 2-Way Inside state.

Once the SVCC is declared up by the signalling protocol, a Hello protocol instance is initiated. If this is an SVCC-based RCC diagnostic test SVCC, then a Hello protocol instance is not initiated.

This protocol is essentially the same as the protocol that runs between lowest-level neighbors, with a few modifications:

1. A port value of 0xFFFFFFFF is always used in the Port ID field in Hello messages. SVCCs between LGNs do not have port IDs assigned to them. If a Hello is received in which the Port ID does not take the value of 0xFFFFFFFF, the event HelloMismatchReceived is triggered.

2. SVCC-based RCCs are always inside one peer group. The events 1-WayOutsideReceived, 2-WayOutsideReceived, CommonHierarchyReceived, and HierarchyMismatchReceived cannot be triggered for SVCCs between LGNs. Instead, if a Hello is received in which the Peer Group ID is not the same as this node's peer group ID, the event HelloMismatchReceived is triggered.

3. The node ID in received Hellos must be equal to the value in the corresponding uplink PTSE. If it is not equal the event HelloMismatchReceived is triggered.

   For the LGN that is the calling party for the SVCC-based RCC, that uplink PTSE is necessarily received before the SVCC is initiated. For the LGN that is the called party, there is a race condition between the arrival of the call setup from the neighbor and the uplink PTSE. If the called-party LGN receives a SETUP from a node which it has yet to recognize as a neighbor, the called-party LGN must accept the call, but ignore any hellos until an uplink PTSE is received indicating that node as a neighbor. The binding between the uplink PTSE and the SVCC-based RCC is the node ID in Hellos received over the SVCC-based RCC and the Upnode ID in the uplink PTSE.

4. An SVCIntegrityTimer is set in the 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.

5. For the LGN that is the called party, a HelloMismatchReceived event is handled by returning to the Attempt 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 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.

6. Failure of the SVCC indicated from lower levels (ATM, PHY, Signalling) is treated as a LinkDown Event. Procedures to re-establish the SVCC are followed, as described in Section 5.5.6.

Make the following changes to the section 5.6.3.1.2 of [PNNI 1.1]:

An SVCC-based RCC between LGNs is established by the LGN with the higher node ID.

At the calling node, the SVCIntegrityTimer is set 1) when the SVCC becomes active, and 2) whenever the state machine enters the Attempt state or the OneWay state and the timer is not already running. The timer is disabled in the TwoWay and Down states. Expiration of the timer causes a return to the Down state. Upon entering the Down state the SVCC is released, ~~and~~ normal procedures for re-establishment of the SVCC are followed, and if there is an outstanding SVCC diagnostics test connection, then it is released. The SVCIntegrityTimer is started with the value SVCCallingIntegrityTime.

At the called node, the SVCIntegrityTimer is set when a SETUP message is received from a LGN neighbor or whenever the state machine enters the Attempt state or the OneWay state and the timer is not already running. The timer is disabled in the TwoWay state. Expiration of the timer causes a return to the Down state and the SVCC is released. The SVCIntegrityTimer is started with the value SVCCalledIntegrityTime.

3 Annex A Protocol Implementation Conformance Statement (PICS) for PNNI Addendum for SVCC-based RCC Diagnostic Test, Version 1.0

A.1 Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented. Such a statement is called a Protocol Implementation Conformance Statement (PICS).

A.1.1 Scope

This document provides the PICS proforma for the Addendum to PNNI 1.1 for the support of SVCC-based RCC Diagnostic Tests [SVCCDIAG], as specified in this document in compliance with the relevant requirements, and in accordance with the relevant guidelines, given in ISO/IEC 9646-2 [CTMI]. In most cases, statements contained in notes in the specification, which were intended as information, are not included in the PICS.

A.1.2 Normative References

[CTMF] ISO/IEC 9646-1: 1994, Information technology – Open systems interconnection – Conformance testing methodology and framework – Part 1: General Concepts (See also ITU Recommendation X.290 (1995)).

[CTMI] ISO/IEC 9646-2:1994, Information technology – Open systems interconnection – Conformance testing methodology and interconnection – Part 2: Abstract test suite specification (See also ITU telecommunication X.291 (1995)).

[PNNI 1.1]] The ATM Forum Technical Committee, af-pnni-0055.002, Private Network to Network Interface V11,April 2002

[SVCCDIAG] The ATM Forum Technical Committee, af-cs-0203.000, PNNI Addendum for SVCC-based RCC Diagnostic Test, Version 1.0, January 2005

A.1.3 Definitions

This following terms defined in ISO/IEC 9646-1[CTMF] are used in this document:

- A Protocol Implementation Conformance Statement (PICS) is a statement made by the supplier of an implementation or system, stating which capabilities have been implemented for a given protocol.
- A PICS proforma is a document, in the form of a questionnaire, designed by the protocol specifier or conformance test suite specifier, which when completed for an implementation or system becomes the PICS.

A.1.4 Acronyms

I.E.	Information Element
IUT	Implementation under test
M	Mandatory requirements (these are to be observed in all cases)
N/A	Not supported, not applicable, or the conditions for status are not met.
O	Optional (may be selected to suit the implementation, provided that any requirements applicable to the options are observed)
O.n	Optional, but support is required for either at least one or only one of the options in the group labelled with the same numeral "n".
PICS	Protocol Implementation Conformance Statement
SUT	System under test

A.1.5 Conformance

The supplier of a protocol implementation which is claimed to conform to the Addendum to PNNI 1.1 for the support of SVCC-based RCC Diagnostic Tests is required to complete a copy of the PICS proforma provided in this document and is required to provide the information necessary to identify both the supplier and the implementation.

A.2 Identification of the Implementation

Implementation Under Test (IUT) Identification

IUT Name: _____

IUT Version: _____

_____

System Under Test (SUT) Identification

SUT Name: _____

Hardware Configuration: _____

_____

_____

Operating System: _____

Product Supplier

Name: _____

Address: _____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address:_____

Additional Information: _____

Client

Name: _____

Address:

_____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address:_____

Additional Information: _____

PICS Contact Person

Name: _____

Address: _____

_____

Telephone Number: _____

Facsimile Number: _____

Email Address:_____

Additional Information: _____

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:

The sections pertaining to SVCC-based RCC diagnostic tests in [SVCCDIAG].

A.3 PICS Proforma

A.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 by the implementor explaining why the implementation is non-conforming.

A.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.

A supplier may also provide additional information, categorised as exceptional or supplementary information. These 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. The exception and supplementary information are 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. The column labelled 'Reference' gives a pointer to sections of the protocol specification for which the PICS Proforma is being written.

A.3.3 Major Capability (MC)

Item	Protocol Feature	Conditions for status	Status Pred.	Spec. Ref.	Support
MC 1	Does the IUT support SVCC-based RCC diagnostic tests?	SS_P or SS_N NOT (SS_P or SS_N) [PNNI 1.1]	M N/A	2.2	Yes_ No_ X_ S_

A.3.4 Procedures for SVCC-based RCC Diagnostic Test (PDT)

Item	Protocol Feature	Conditions for status	Status Pred.	Spec. Ref.	Support
PDT 1	When ThisLGN establishes an SVCC to node X, the SVCC-based RCC diagnostic test is enabled, and ThisLGN's node ID is numerically larger than the neighboring LGNs node ID, does the LGN start the SVCCDiagnosticTestTimer for ThisLGN if it is not already running?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 2	If an existing SVCC to a neighboring LGN is closed, does the LGN stop the SVCCDiagnosticTest Timer for ThisLGN if it was running?	MC 1	M	2.2	Yes_ No_ X_ S_

PDT 3	When an SVCCDiagnosticTestTimer expires for the inter-LGN SVCC to the neighboring LGN node X, does the LGN open an inter-LGN SVCC with a Calling Party Number set to a unique value that does not equal the ATM address of any other LGN's that node X is a neighboring peer, with a Called Party Number set to the ATM address of X, and using the same DTL construction and alternate path selection procedures as for a normal SVCC-based RCC?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 4	Does the node support the configuration of the Calling Party Number to be used for SVCC-based RCC diagnostic tests?	MC 1	O	2.2	Yes_ No_ X_ S_
PDT 5	If a setup attempt succeeds for an SVCC-based RCC diagnostic test connection, does the LGN then clear the SVCC-based RCC diagnostic test connection by sending RELEASE messages with cause number 16 "normal call clearing"?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 6	On clearing of an SVCC-based RCC diagnostic test connection and if SVCC-based RCC diagnostic test is enabled, does the LGN then start the SVCCDiagnosticTestTimer timer with value SVCDiagnosticTestInterval?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 7	If the SVCC diagnostic setup attempt fails, does the LGN then log an error to the network management system?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 8	If the SVCC diagnostic setup attempt fails and the SVCC-based RCC diagnostic test is enabled, does the LGN then start the SVCCDiagnosticTestTimer timer with value SVCDiagnosticTestInterval?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 9	If ThisPGL ceases to be PGL, does the LGN clear the SVCC diagnostic test connections in transit to all of its neighboring LGNs by sending RELEASE messages with cause number 16 "normal call clearing"?	MC 1	M	2.2	Yes_ No_ X_ S_
PDT 10	At the calling node, does the node support the initiation of an on-demand SVCC-based RCC diagnostic test?	MC 1	O	2.2	Yes_ No_ X_ S_

PDT 11	When an SVCC is declared up by the signalling protocol and the SVCC is an SVCC-based RCC diagnostic test SVCC, does the LGN NOT initiate a Hello protocol instance?	MC1	M	2.2	Yes_ No_ X_ S_
PDT 12	At the calling node, upon entering the Down state, is any outstanding SVCC-based RCC diagnostics connection attempt released?	MC1	M	2.2	Yes_ No_ X_ S_