



## SNMP Management Information Base

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The SES controller SNMP implementation uses the MGX 8800 distributed Management Information Base. In this implementation, a master agent resides on a PXM card. A subagent also resides on the PXM to support the PNNI application.

This appendix contains the following sections:

- SNMP Fundamentals
- MIBs Supported by the SES Controller

### SNMP Fundamentals

A network management system contains several (potentially many) nodes, each with a processing entity—termed an agent—which has access to management instrumentation, at least one management station, and a management protocol that conveys management information between the agents and management stations.

Network management stations execute management applications which monitor and control network elements. Network elements are devices such as hosts, routers, terminal servers, and so forth, which are monitored and controlled through access to their management information.

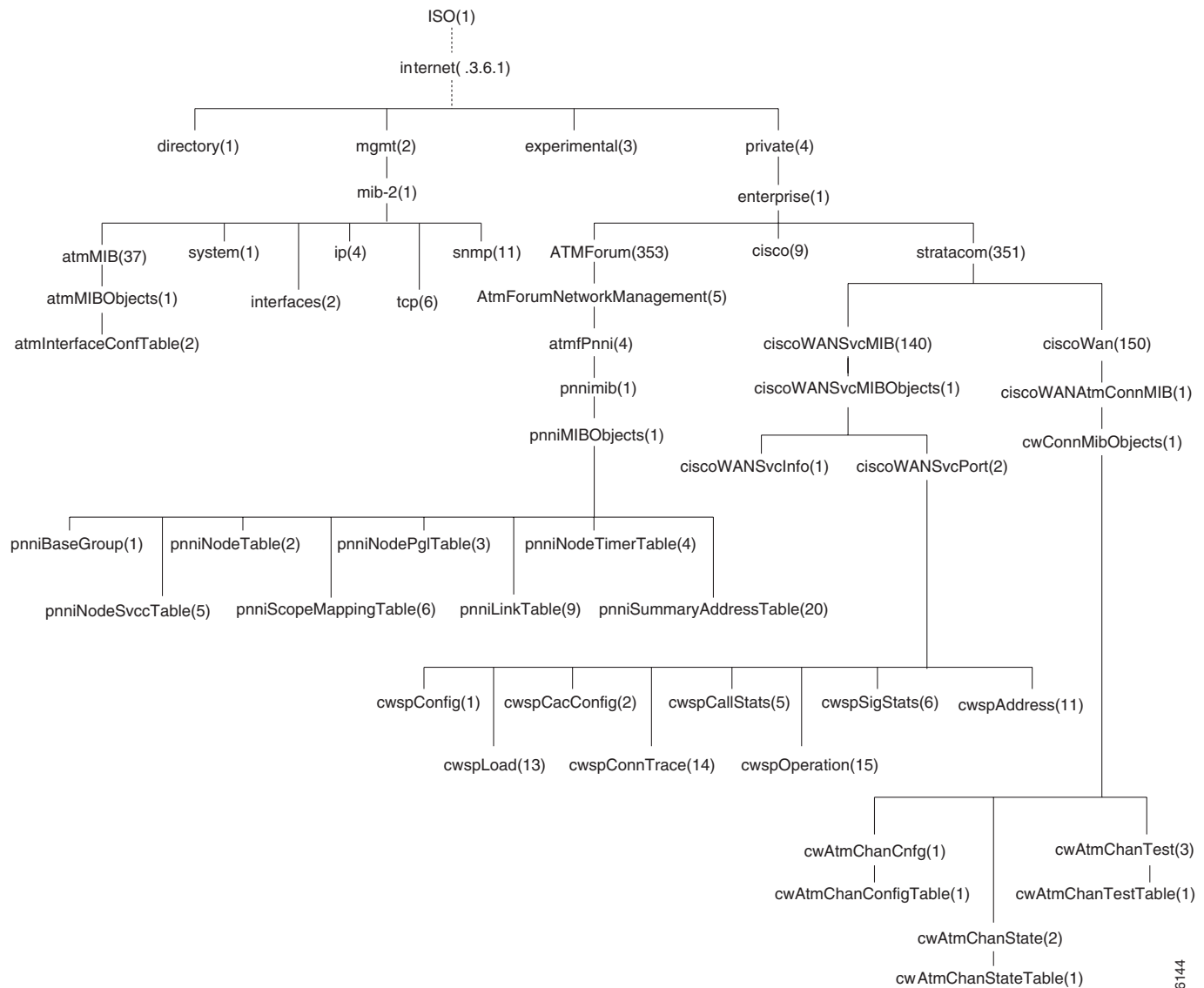
Management information is viewed as a collection of managed objects. Collections of related objects are defined in Management Information Base (MIB) modules. These modules are written using a subset of OSI's Abstract Syntax Notation One (ASN.1), termed the Structure of Management Information (SMI).

The management protocol, SNMP, provides for the exchange of messages that convey management information between the agents and the management stations.

### MIB Tree

Figure D-1 shows the MIB tree from its root, “iso,” to some of its lower branches. The branches of primary interest are “mgmt” and “private.” The mgmt branch contains standard MIBs and the private branch contains enterprise MIBs. Private enterprises obtain branch number assignments from the Internet Assigned Numbers Authority (IANA). Cisco developers obtain branch number assignments in the Cisco branch from the Cisco Assigned Numbers Authority (CANA).

Figure D-1 MIB Tree



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The following object identifiers (OID) all refer to the same place in the tree:

```
iso.org.dod.internet.mgmt.mib-2.system
1.3.6.1.2.1.1
iso.org.dod.internet.2.1.1
```

An object is a leaf on such a tree. For example, sysDescr is an object in the System branch of MIB-II. The unique identification of an object comprises the list of branch points down to the object plus an instance identifier. The instance identifier for an ordinary, single instance (scalar) object is always zero, so the full OID for sysDescr is shown in the following example:

```
iso.internet.mgmt.mib-2.system.sysDescr.0
```

The numeric OID for sysDescr is shown in the following example:

```
1.3.6.1.2.1.1.1.0
```

**Note**


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Some Table objects can have more than one instance.

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## MIB Objects Overview

A primary component of SNMP is the MIB, defining data for observation and control and asynchronous notifications (Trap in SNMPv1).

The SNMP MIB is conceptually a tree structure with table, the leaves of MIB tree are individual items of data called **objects**.

### Object Identifier

An object identifier uniquely designates any point in the tree, whether leaf object or branch point. An object identifier may be expressed as a series of integers or text strings. The numeric form is used in the protocol among machines. The text form, sometimes mixed with the numeric form is for use by people. Technically, the numeric form is the object name and the text form is the object descriptor. In practice, either is usually called an object identifier (OID).

### Object Definitions

An object definition contains the following fields: SYNTAX, MAX-ACCESS, STATUS, DESCRIPTION, IndexPart, and DefValPart.

```
OBJECT-TYPE MACRO ::=
BEGIN
    TYPE NOTATION ::=
        "SYNTAX" Syntax
        UnitsPart
        "MAX-ACCESS" Access
        "STATUS" Status
        "DESCRIPTION" Text
        IndexPart
        DefValPart

    Syntax ::=
        data types -- please see data type table below for primitive data types allowed by
        the SNMP SMI, and Textual conventions.

    Access ::=
        "not-accessible"
        | "accessible-for-notify"
        | "read-only"
        | "read-write"
        | "read-create"

    Status ::=
        "current"
        | "deprecated"
        | "obsolete"

    IndexPart ::=
        "INDEX"
        | empty
END
```

The MIB object data types are shown in the following table.

Data Type	Description
<b>primitive type</b>	
INTEGER	Integer-valued information between -2147483648 and 2147483647).
OCTET STRING	String of bytes of length 0 to 65,535
OBJECT IDENTIFIER	Numeric ASN-1-type object identifier
Integer32	Integer-valued information in the range from -2147483648 through 2147483647.
Unsigned32	Unsigned Integer-valued information in the range from 0 through 2147483647.
Counter32	Represents a non-negative integer which monotonically increases until it reaches a maximum value of 4294967295 decimal, when it wraps around and starts increasing again from zero
TimeTicks	Period of time, measured in units of 0.01 seconds, in the range from 0 through 4294967295.
<b>Textual Convention</b>	
TimeStamp	Value of the sysUpTime object at which a specific occurrence happened. The specific occurrence must be defined in the description of any object defined using this type, TimeTicks.
TruthValue	Represents a boolean value, INTEGER { true(1), false(2) }
DisplayString	Octet string, in the range from 0 through 255.
AtmAddress	ATM End-System Addresses, OCTET STRING (SIZE (8   20))
NetPrefix	Network-Prefixes for an ATM Address, OCTET STRING (SIZE (8   13))
IpAddress	Represents a 32-bit internet address. It is in network byte-order, OCTET STRING (SIZE (4))
RowStatus	Manages the creation and deletion of rows, and is the value of the SYNTAX clause for the status column of a row.

Data Type	Description
CiscoAtmServiceCategory	<p>The ATM forum service categories. Additionally, ABR foresight service type is also supported. The valid values are</p> <ul style="list-style-type: none"> <li>• cbr1(1)</li> <li>• vbr1RT(2)</li> <li>• vbr2RT(3)</li> <li>• vbr3RT(4)</li> <li>• vbr1nRT(5)</li> <li>• vbr2nRT(6)</li> <li>• vbr3nRT(7)</li> <li>• ubr1(8)</li> <li>• ubr2(9)</li> <li>• abr(10)</li> <li>• cbr2(11)</li> <li>• cbr3(12).</li> </ul>
CiscoWanLpbkTypes	<p>Defines possible loopback configurations for a connection.</p> <ul style="list-style-type: none"> <li>• noLpbk(1)—no loopback or clear configured loopback</li> <li>• destructive(2)—loopback all cells, causing data disruption.</li> <li>• nonDestructive(3)—loopback performed using OAM loopback cells.</li> </ul> <p>Does not disrupt regular traffic.</p>
CiscoWanLpbkDir	<p>Direction in which looped should be effected.</p> <ul style="list-style-type: none"> <li>• external (1)—loop port traffic back to port. Applicable only for destructive mode.</li> <li>• internal(2)—loop switch's egress traffic back to switch. Applicable only for destructive mode.</li> <li>• forward(3)—inject OAM loopback cells towards the switching fabric (ingress). Applicable only for non-destructive mode.</li> <li>• reverse(4)—inject OAM loopback cells towards the port (egress). Applicable only for non-destructive mode.</li> </ul>
CiscoWanTestStatus	<p>Defines possible loopback test status at an endpoint.noStatus (1).</p> <p>The valid values are: lpbkInProgress(2), lpbkSuccess(3), lpbkAbort(4), lpbkTimeOut(5), lpbkInEffect(6)</p>
CiscoWanOperStatus	<p>Defines operational status of an endpoint. The valid values are operOk(1), operFail(2), or adminDown(3)</p>
CiscoWanNsapAtmAddress	<p>ATM address used by the networking entity. The only address type presently supported is NSAP (20 octets).</p> <p>OCTET STRING (SIZE(20))</p>

Data Type	Description
CiscoWanAlarmState	<p>Defines possible alarms at an endpoint. The valid options are</p> <ul style="list-style-type: none"> <li>• ingAisRdi(1)—Endpoint receiving AIS or RDI cells in ingress direction</li> <li>• egrAisRdi(2)—Endpoint receiving AIS or RDI cells in egress direction</li> <li>• conditioned(4)— Networking entity has forced the endpoint out of service. This alarm could be attributed to either routing failure or to a maintenance operation initiated by the networking entity.</li> <li>• interfaceFail(8)—Interface to which this connection belongs has failed.</li> <li>• ccFail (16)— OAM continuity check between the connection and its peer endpoint has detected a failure.</li> <li>• mismatch(32)—Connection exists in SM database, but not in the network controller database.</li> <li>• ingAbitFail(64)—Feeder connection detects A-bit failure in the ingress direction.</li> </ul>
CiscoWanXmtState	<p>Defines possible transmit states of an endpoint. Enter one of the following options:</p> <ul style="list-style-type: none"> <li>• normal(1)—Endpoint transmitting normal traffic.</li> <li>• sendingAIS(2)—Endpoint inhibits regular traffic, sends AIS on egress</li> <li>• sendingRDI(3)—Endpoint inhibits regular traffic, sends AIS on egress</li> </ul>
CiscoWanRcvState	<p>Defines possible receive states of an endpoint. Enter one of the following options:</p> <ul style="list-style-type: none"> <li>• normal(1)—Endpoint receiving normal traffic.</li> <li>• receivingAIS(2)—Endpoint receiving AIS, in either ingress/egress.</li> <li>• receivingRDI(3)—Endpoint receiving RDI, in either ingress/egress.</li> <li>• ccFailure(4)—Endpoint does not receive OAM CC cells.</li> </ul>
CiscoWanERSCfg	<p>Defines possible configuration for Explicit Rate Stamping (ERS). Enter one of the following options:</p> <ul style="list-style-type: none"> <li>• None(1)—Disable the ERS on connection.</li> <li>• enableIngress(2)—Enable ERS in the Ingress direction ONLY.</li> <li>• enableEgress(3)—Enable ERS in the Egress direction ONLY.</li> <li>• enableBoth(4)—Enable ERS in both direction.</li> </ul>
CiscoWanVSVDConfig	<p>Defines possible VSVD configuration applicable to an endpoint. Enter one of the following options:</p> <ul style="list-style-type: none"> <li>• vsvdOff (1)—Disable VSVD.</li> <li>• vsvdOn(2)—Enable VSVD.</li> <li>• switchDefault(3)—Use default settings on switch.</li> </ul>

Data Type	Description
CiscoWanAisIW	Defines an SPVC endpoint's AIS capability: <ul style="list-style-type: none"> <li>• e2eAisCapable(1)—Endpoint capable of detecting/generating e2e AIS.</li> <li>• segAisCapable(2)—Endpoint capable of detecting/generating seg AIS.</li> </ul>
AbrRateFactors	Defines possible rate factors to be used in increasing/decreasing ABR cell rate. The valid values are: <ul style="list-style-type: none"> <li>• oneOver32768(1)</li> <li>• oneOver16384(2)</li> <li>• oneOver8192(3)</li> <li>• oneOver4096(4)</li> <li>• oneOver2048(5)</li> <li>• oneOver1024(6)</li> <li>• oneOver512(7)</li> <li>• oneOver256(8)</li> <li>• oneOver128(9)</li> <li>• oneOver64(10)</li> <li>• oneOver32(11)</li> <li>• oneOver16(12)</li> <li>• oneOver8(13)</li> <li>• oneOver4(14)</li> <li>• oneOver2(15)</li> <li>• one(16)</li> </ul>

## SNMP Traps

A trap is an unsolicited message sent by an agent to a registered SNMP management stations. Traps notify the management stations of some unusual event. Traps provide management stations with the following information:

- Network management subsystem that generated the trap (Enterprise)—Identifies the network management subsystem that generated the trap.
- IP address of the object generating the trap (Agent-addr).
- Generic trap type (Generic)—Pre-defined trap type, RFC1157 generic trap types includes coldStart, warmStart, linkDown, linkUp, authenticationFailure, egpNeighborLoss and enterpriseSpecific.
- Specific trap type (Specific)—If the value of Generic Trap Type is enterpriseSpecific, this specific trap type field contains a number that indicates a CISCO specific trap.
- Time between the last initialization of the network entity that issued the trap and the generation of the Atropatene Ticks.
- “Interesting” information (Varbind List)—Additional information relating to the trap (the significance of this field is implementation-specific).

# MIBs Supported by the SES Controller

The SES controller uses the following MIBs:

- ATM MIB Object
- PNNI MIB Objects
- Cisco WAN ATM MIB Objects

## ATM MIB Object

The ATM MIB uses the atmInterfaceConfTable MIB objects. Table D-1 describes the objects in the atmInterfaceConfTable MIB.

### atmInterfaceConfTable

The atmInterfaceConfTable contains ATM local interface configuration parameters, one entry per ATM interface port. Although there are many attributes for the table, the SES controller supports only atmInterfaceMyNeighborIpAddress and atmInterfaceMyNeighborIfName as read-only access.

**Table D-1** atmInterfaceConfTable Entries

No.	Object Type	Access	Description
11	atmInterfaceMyNeighborIpAddress	read-write	<p>IP address of the neighbor system connected to the far end of this interface, to which a network management station can send SNMP messages, as IP datagrams sent to UDP port 161, in order to access network management information concerning the operation of that system.</p> <p><b>Note</b> The value of this object may be obtained by using various methods, such as manual configuration, or through ILMI interaction with the neighbor system.</p>
12	atmInterfaceMyNeighborIfName	read-write	<p>Text name of the interface on the neighbor system at the far end of this interface, and to which this interface connects. If the neighbor system is manageable with SNMP and supports the object ifName, the value of this object must be identical with that of ifName for the ifEntry of the lowest level physical interface for this port.</p> <p>If this interface does not have a text name, the value of this object is a zero length string.</p> <p><b>Note</b> The value of this object may be obtained by using various methods, such as manual configuration, or through ILMI interaction with the neighbor system.</p>



## PNNI MIB Objects

The PNNI MIB refers to the following objects:

- pnniBaseGroup
- pnniNodeTable
- pnniNodePglTable
- pnniNodeTimerTable
- pnniNodeSvccTable
- pnniScopeMappingTable
- pnniLinkTable
- pnniSummaryAddressTable
- These MIB Objects are described in Table D-2 through Table D-9.

### pnniBaseGroup

Table D-2 describes the objects in the pnniBaseGroup MIB.

**Table D-2** pnniBaseGroup

No.	Object Type	Access	Description
1	pnniHighestVersion	read only	The highest version of the PNNI protocol that the software in this switching system is capable of executing. <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.6.1.”
2	pnniLowestVersion	read only	The lowest version of the PNNI protocol that the software in this switching system is capable of executing. <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.6.1.”
3	pnniDtlCountOriginator	read only	The total number of DTL stacks that this switching system has originated as the DTLOriginator and placed into signaling messages. This includes the initial DTL stacks computed by this system as well as any alternate route (second, third choice and so forth) DTL stacks computed by this switching system in response to crankbacks
4	pnniDtlCountBorder	read only	The number of partial DTL stacks that this switching system has added into signaling 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, and so forth) partial DTL stacks computed by this switching system in response to crankbacks.
5	pnniCrankbackCountOriginator	read only	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.
6	pnniCrankbackCountBorder	read only	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. This switching system was not the crankback destination, only those crankbacks that were directed to this switching system are counted here.

Table D-2 pnniBaseGroup (continued)

No.	Object Type	Access	Description
7	pnniAltRouteCountOriginator	read only	The total number of alternate DTL stacks that this switching system computed and placed into signaling messages as the DTL originator.
8	pnniAltRouteCountBorder	read only	The total number of alternate partial DTL stacks that this switching system computed and placed into signaling messages as a entry border node.
9	pnniRouteFailCountOriginator	read only	The total number of times the switching system failed to compute a viable DTL stack as the DTL originator for some call. It indicates the number of times a call was cleared from this switching system due to originator routing failure.
10	pnniRouteFailCountBorder	read only	The total number of times 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.
11	pnniRouteFailUnreachableOriginator	read only	The total number of times the switching system failed to compute a viable DTL stack as the DTLOriginator because the destination was unreachable. For example, those calls that are cleared with cause #2 'specified transit network unreachable' or cause #3 'destination unreachable' in the cause.
12	pnniRouteFailUnreachableBorder	read only	The total number of times 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; for example, those calls that are cleared or cranked back with cause #2 "specified transit network unreachable" or cause #3 "destination unreachable" in the cause.

## pnniNodeTable

The pnniNodeTable (Table D-3) collects attributes that affect the operation of a PNNI logical node.


**Note**

createAndWait is not supported as a rowStatus value for the pnniNodeRowStatus attribute.


**Note**

See "ATM Forum PNNI 1.0 Annex F."

Table D-3 pnniNodeTable

No.	Object Type	Access	Description	Default
1	pnniNodeIndex	not-accessible	A value assigned to a node in this switching system that uniquely identifies it in the MIB.	—
2	pnniNodeLevel	read-create	<p>The level of the node in the PNNI hierarchy. This attribute is used to determine the default node ID and the default peer group ID. This object may only be written when pnniNodeAdminStatus has the value down.</p> <p><b>Note</b> See “ATM Forum PNNI 1.0 Section 5.3.1 Annex F.”</p>	96
3	pnniNodeId	read-create	<p>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.</p> <p>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.</p> <p>If pnniNodeLowest is false, the default node ID takes the form defined in Section 5.3.3 for logical group nodes. The first octet is equal to pnniNodeLevel, the next fourteen octets are equal to the value of pnniNodePeerGroupId for the child node whose election as PGL causes this LGN to be instantiated. The next six are octets equal to the ESI of pnniNodeAtmAddress, and the last octet equal to zero.</p>	—
4	pnniNodeLowest	read-create	<p>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.</p> <p>This object may only be written when pnniNodeAdminStatus has the value “down.”</p>	—
5	pnniNodeAdminStatus	read-create	<p>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).</p> <p>When pnniNodeAdminStatus is down, then pnniNodeOperStatus must also be “down.”</p>	Up
6	pnniNodeOperStatus	read-only	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.	—

Table D-3 pnniNodeTable (continued)

No.	Object Type	Access	Description	Default
8	pnniNodeAtmAddress	read-create	<p>This node's ATM End System Address. Remote systems exchanging PNNI protocol packets with this node direct the packets or calls to this address.</p> <p>This attribute may only be written when pnniNodeAdminStatus has the value down.</p> <p><b>Note</b> See "ATM Forum PNNI 1.0 Section 5.2.2."</p>	—
9	pnniNodePeerGroupId	read-create	<p>The Peer Group Identifier of the peer group of which the node will become a member.</p> <p>The default value of this attribute has the first octet equal to pnniNodeLevel. The next pnniNodeLevel bits are equal to the pnniNodeLevel bits starting from the third octet of pnniNodeId. The remainder are padded with zeros.</p> <p>This object may only be written when pnniNodeAdminStatus has the value down.</p> <p><b>Note</b> See "ATM Forum PNNI 1.0 Section 5.3.2, Annex F."</p>	—
10	pnniNodeRestrictedTransit	read-create	<p>Specifies whether the node is restricted from 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.</p> <p><b>Note</b> See "ATM Forum PNNI 1.0 Section 5.8.1.2.3."</p>	—
11	pnniNodeComplexRep	read-create	<p>Specifies whether this node uses the complex node representation. A value of "true" indicates that the complex node representation is used. 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.</p> <p>Reference: ATM Forum PNNI 1.0 Section 5.8.1.2.3</p>	—
12	pnniNodeRestrictedBranching	read-only	<p>Indicates whether the node is able to support additional point-to-multipoint branches. A value of "false" indicates that additional branches can be supported; 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.</p> <p>Reference: ATM Forum PNNI 1.0 Section 5.8.1.2.3</p>	—

Table D-3 pnniNodeTable (continued)

No.	Object Type	Access	Description	Default
13	pnniNodeDatabaseOverload	read-only	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.  <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.8.1.2.3.”	—
14	pnniNodePtses	read-only	Gauges the total number of PTSes currently in this node’s topology databases(s).	—
15	pnniNodeRowStatus	read-create	Creates, deletes, activates, and deactivates a node.	—

## pnniNodePglTable

Peer group leader election information for a PNNI node in this switching system. Table D-4 describes the objects in the pnniNodePglTable.

Reference: ATM Forum PNNI 1.0 Section 5.10.1.

Table D-4 pnniNodePglTable

No.	Object Type	Access	Description	Default
1	pnniNodePglLeadershipPriority	read-create	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  <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.10.1.2.”	0
2	pnniNodeCfgParentNodeIndex	read-create	The local node index used to identify the node that represents this peer group at the next higher level hierarchy, if this node becomes peer group leader. Value 0 indicates that there is no parent node.  <b>Note</b> See “ATM Forum PNNI 1.0 Annex F.”	0

Table D-4 pnniNodePglTable (continued)

No.	Object Type	Access	Description	Default
3	pnniNodePglInitTime	read-create	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.  <b>Note</b> See “ATM Forum PNNI 1.0 Annex G PGLInitTime”	15
4	pnniNodePglOverrideDelay	read-create	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 objects set the amount of time that will pass before a two thirds majority declares the node a peer group leader. Attempts to get a unanimous agreement will be abandoned.  <b>Note</b> See “ATM Forum PNNI 1.0 Annex G OverrideDelay.”	30
5	pnniNodePglReelectTime	read-create	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.  <b>Note</b> See “ATM Forum PNNI 1.0 Annex G ReElectionInterval.”	15
6	pnniNodePglState	read-only	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.  <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.10.1.1.2.”	

Table D-4 pnniNodePglTable (continued)

No.	Object Type	Access	Description	Default
7	pnniNodePreferredPgl	read-only	The Node ID of the node that the local node believes should be or becomes 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).  <b>Note</b> See “ATM Forum PNNI 1.0 Section 5.10.1.1.6.”	
8	pnniNodePeerGroupLeader	read-only	The Node Identifier of the node that 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).	
9	pnniNodePglTimeStamp	read-only	The time at which the current Peer Group Leader established itself.	
10	pnniNodeActiveParentNodeId	read-only	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).	

## pnniNodeTimerTable

Table D-5 describes initial PNNI timer values and significant change thresholds

**Table D-5** pnniNodeTimerTable

No.	Object Type	Access	Description	Default
1	pnniNodePtseHolddown	read-create	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	10
2	pnniNodeHelloHolddown	read-create	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	10
3	pnniNodeHelloInterval	read-create	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	15
4	pnniNodeHelloInactiveFactor	read-create	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	5
5	pnniNodeHlinkInact	read-create	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	120
6	pnniNodePtseRefreshInterval	read-create	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	1800



Table D-5 pnniNodeTimerTable (continued)

No.	Object Type	Access	Description	Default
7	pnniNodePtseLifetimeFactor	read-create	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	200
8	pnniNodeRxmtInterval	read-create	The period between retransmissions of unacknowledged Database Summary packets, PTSE Request packets, and PTSPs  Reference: ATM Forum PNNI 1.0 Annex G DSRxmtInterval	5
9	pnniNodePeerDelaydAckInterval	read-create	The minimum amount of time between transmissions of delayed PTSE acknowledgement packets.	10
10	pnniNodeAvcrPm	read-create	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.	50
11	pnniNodeAvcrMt	read-create	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	3
12	pnniNodeCdvPm	read-create	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	25
13	pnniNodeCtdPm	read-create	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 maxCTD_PM	50

## pnniNodeSvccTable

The pnniNodeSvccTable is a table of variables related to SVCC-based routing control channels.

**Table D-6 Nodal SVCC-based RCC Variables Table**

No.	Object Type	Access	Description	Default
1	pnniNodeSvccInitTime	read-create	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.	4
2	pnniNodeSvccRetryTime	read-create	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.	30
3	pnniNodeSvccCallingIntegrityTime	read-create	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	35

**Table D-6 Nodal SVCC-based RCC Variables Table (continued)**

No.	Object Type	Access	Description	Default
4	pnniNodeSvccCalledIntegrityTime	read-create	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	50
5	pnniNodeSvccTrafficDescriptorIndex	read-create	A 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	

## pnniScopeMappingTable

The pnniScope Table contains the mapping of membership and connection scope from organization scope values (used at the UNI interfaces) to PNNI scope (for example, in terms of PNNI routing level indicators).

Reference: ATM Forum PNNI 1.0 Section 5.3.6.

**Table D-7 pnniScopeMappingTable**

No.	Object Type	Access	Description	Default
1	pnniScopeLocalNetwork	read-create	The highest level of PNNI hierarchy (namely, smallest PNNI routing level) that lies within the organizational scope value localNetwork(1).	96
2	pnniScopeLocalNetworkPlusOne	read-create	The highest level of PNNI hierarchy (namely, smallest PNNI routing level) that lies within the organizational scope value localNetworkPlusOne(1).	96

Table D-7 pnniScopeMappingTable (continued)

No.	Object Type	Access	Description	Default
3	pnniScopeLocalNetworkPlusTwo	read-create	The highest level of PNNI hierarchy (namely, smallest PNNI routing level) that lies within the organizational scope value localNetworkPlusTwo(3).	96
4	pnniScopeSiteMinusOne	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value siteMinusOne(4).	80
5	pnniScopeIntraSite	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value interaSite(5).	80
6	pnniScopeSitePlusOne	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value sitePlusOne(6).	72
7	pnniScopeOrganizationMinusOne	read-create	The highest Level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value organizationMinusOne(7).	72
8	pnniScopeIntraOrganization	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value intraOrganization(8).	64
9	pnniScopeOrganizationPlusOne	read-create	The highest level of PNNI hierarchy (namely, the PNNI routing level) that lies within the organizational scope value organizationPlusOne(9).	64

Table D-7 pnniScopeMappingTable (continued)

No.	Object Type	Access	Description	Default
10	pnniScopeCommunityMinusOne	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value communityMinusOne(10).	64
11	pnniScopeIntraCommunity	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value intrCommunity(11).	48
12	pnniScopeCommunityPlusOne	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope communityPlusOne(1). value	48
13	pnniScopeRegional	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value regional(13).	32
14	pnniScopeInterRegional	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value interRegional(14).	32
15	pnniScopeGlobal	read-create	The highest level of PNNI hierarchy (namely, the smallest PNNI routing level) that lies within the organizational scope value vlobal(15).	0

## pnniLinkTable

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 and 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.

**Table D-8** pnniLinkTable

No.	Object Type	Access	Description	Default
1	ppniLinkPortId	not-accessible	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.	
2	ppniLinkType	read-only	Indicates the type of link being described.	
3	ppniLinkVersion	read-only	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."	
4	ppniLinkHelloState	read-only	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 LGCs, this attribute indicates the state of the corresponding LGC 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 <i>notApplicable</i> .  Reference: ATM Forum PNNI 1.0 Section 5.6.2.1.	

Table D-8 pnniLinkTable (continued)

No.	Object Type	Access	Description	Default
5	pnniLinkRemoteNodeId	read-only	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.	
6	pnniLinkRemotePortId	read-only	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.	
7	pnniLinkDerivedAggrToken	read-only	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	
8	pnniLinkUpnodeId	read-only	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.	
9	pnniLinkUpnodeAtmAddress	read-only	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.	

Table D-8 pnniLinkTable (continued)

No.	Object Type	Access	Description	Default
10	pnniLinkCommonPeerGroupId	read-only	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.	
11	ppniLinkIfIndex	read-only	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.	
12	PnniSvccRccIndex	read-only	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.	
13	pnniLinkRcvHellos	read-only	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.	
14	pnniLinkXmtHellos	read-only	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.	



## pnniSummaryAddressTable

The pnniSummaryAddressTable is a list of the summary address prefixes that may be advertised by the specified logical PNNI entity.


**Note**

createAndWait is not supported as a rowStatus value for the pnniSummaryAddressRowStatus attribute.

Reference: ATM Forum PNNI 1.0 Section 5.9.2

**Table D-9** pnniSummaryAddressTable

No.	Object Type	Access	Description	Default
1	pnniSummaryAddressType	not-accessible	The type (e.g. internal or exterior) of summary being described.	
2	pnniSummaryAddressAddress	not-accessible	The ATM end system address prefix for the summary.	
3	pnniSummaryAddressPrefixLength	not-accessible	The prefix length for the summary.	
4	pnniSummaryAddressSuppress	read-create	Determines what is done with addresses that are being summarized by the instance. The default value 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.	false
5	pnniSummaryAddressState	read-only	Indicates whether the summary is currently being advertised by the node within the local switching system into its peer group.	
6	pnniSummaryAddressRowStatus	read-create	To create, delete, activate, and deactivate a summary	

## Cisco WAN SVC MIB Objects

- ciscoWANSvcInfo
- ciscoWANSpvcPort

## ciscoWANSvcInfo

**Table D-10 SVC Information Group**

No.	Object Type	Access	Description	Default
1	cwsSwRevision	read-only	PNNI network controller software revision number	
6	cwsControllerStatus	read-only	Administrative status of the controller as active(1), standby(2), or quiescent(3). <ul style="list-style-type: none"> <li>Active (1) indicates the card is in active state.</li> <li>Stanby(2) indicates the card is out of service</li> <li>Quiescent(3) is neither of the above two conditions are present.</li> </ul>	
7	cwspPnniStndbyControllerStatus	read-only	Administrative status of the standby controller. This object is only used in the trap varbind.	
8	cwspPnniControllerStatus	read-only	Administrative status of the PNNI controller.	
9	cwspPnniControllerPhySlot	read-only	the PNNI controller physical location. This object is only used in the trap varbind.	

## CiscoWANSpvc Port

- cwspConfigTable
- cwspCallStatsTable
- cwspCacConfigTable
- cwspSigStatsTable
- cwspAddressTable
- cwspLoadTable
- cwspConnTrace
- cwspOperationTable

### cwspConfigTable

The interface configuration table collects attributes that affect the operation of the controller interface.



**Note**

Use *createAndGo* to create a row and enter 3 (destroy) to delete a row. The managed device will return either active or notInService for a row status.

There is a single row for each interface that the managed system is expected to be added or managed.

Table D-11 Interface Configuration Table Entries

No	Object Type	Access	Description	Default
1	cwspAdminStatus	read-create	Administrative status of the interface, as either in service or out of service. <ul style="list-style-type: none"> <li>inService(1) indicates that the interface is currently operational.</li> <li>outService(2) indicates that the interface is not operational.</li> </ul>	outService
3	cwspSvcBlocked	read-create	Indicates whether switch's virtual connections are allowed through this interface.	false
4	cwspSpvcBlocked	read-create	Indicates whether soft permanent virtual connections are allowed through this interface.	false
5	cwspIlmiAddrRegEnable	read-create	Indicates whether ILMI address registration is enabled or disabled.	true
6	cwspIlmiAutoConfEnable	read-create	Indicates whether auto-configuration of the interface is turned on or off. If auto-configuration is enabled, the interface comes up using the ILMI auto-configuration.	true
7	cwspIlmiServRegEnable	read-create	Indicates whether service registry is enabled or disabled on the PNNI controller interface.	true
8	cwspPhyIdentifier	read-create	Indicates the physical identification of the interface. Mandatory when the port is provisioned for the first time through SNMP.	
9	cwspSignallingVpi	read-create	Denotes the signaling VPI used on the interface in the range of 0 and 4095.	0
10	cwspSignallingVci	read-create	Indicates the signaling VCI used on the PNNI Controller interface, in the range 0 to 65535.	5
11	cwspRoutingVpi	read-create	Indicates the VPI used for PNNI lowest level RCC.	0
12	cwspRoutingVci	read-create	Indicates the VCI used for the PNNI lowest level RCC, in the range 0 to 65535.	18
13	cwspMaxVpiBits	read-only	Maximum number of active VPI bits on this ATM interface in the range of 0 to 12. For virtual interfaces (namely, the virtual path connections used by PNNI), this value has no meaning and is set to zero.	
14	cwspMaxVciBits	read-only	Maximum number of active VCI bits on this ATM interface.	

Table D-11 Interface Configuration Table Entries (continued)

No	Object Type	Access	Description	Default
15	cwspUniVersion	read-create	<p>Indication of the latest version of the ATM Forum UNI signaling specification on this ATM interface. If this value is not present, a version of the UNI earlier than 3.1 is assumed. Acceptable values are:</p> <ul style="list-style-type: none"> <li>• uni20(1),</li> <li>• uni30(2),</li> <li>• uni31(3),</li> <li>• uni40(4),</li> <li>• ituDss2(5),</li> <li>• frf4(6)</li> <li>• unsupported(7)</li> <li>• ip(8)</li> </ul> <p>If the peer IME value of this object is the same as, or later than the local IME value, the version corresponding to the local IME value should be attempted.</p> <p>If the peer IME value of this object is earlier the local IME should attempt the version corresponding to the peer IME value.</p> <p>If neither of the above two conditions exist, compatibility of the two IMEs cannot be assumed.</p>	uni31(3)
16	cwspNniVersion	read-create	<p>Indication of the latest version of the ATM Forum PNNI Signaling specification on this ATM interface.</p> <p>Acceptable values are:</p> <ul style="list-style-type: none"> <li>• iisp30(1),</li> <li>• iisp31(2),</li> <li>• pnni10(3)</li> </ul> <p><b>Note</b> the PNNI routing version is determined through ILMI.</p> <p>If the peer IME value of this object is the same as, or later than the local IME value, the version corresponding to the local IME value should be attempted. If the peer IME value of this object is earlier, the local IME should attempt the version corresponding to the peer IME value.</p> <p>If neither of the above two conditions exist, compatibility of the two IMEs cannot be assumed.</p>	pnni10(3)
17	cwspUniType	read-create	Type of ATM device, either public or private.	private(2)

Table D-11 Interface Configuration Table Entries (continued)

No	Object Type	Access	Description	Default
18	cwspSide	read-create	Type of ATM device, either user(1) or network(2). This object is used in automatic ATM interface-type determination procedure such that a correct operational ATM interface-type can be determined. An ATM end system shall take the value of user(1) and an ATM network node shall take the value of node (2).	network(2)
19	cwspMaxP2pCalls	read-create	Maximum number of point-to-point calls (including VCs and VPs allowed on the interface) in the range 0 to 65535. This attribute is read-only.	10000
20	cwspMaxP2mpRoots	read-create	Maximum number of root VCs (for point-to-multipoint) allowed on the interface in the range 0 to 65535.	1000
21	cwspMaxP2mpLeafs	read-create	Maximum number of leaf VCs (for point-to-multipoint) allowed on the interface, in the range 0 to 65535.	4095
22	cwspMinSvccVpi	read-create	Minimum SVCC VPI configured on the interface, in the range 0 to 4095.	0
23	cwspMaxSvccVpi	read-create	Maximum SVCC VPI configured on the interface, in the range 0 to 4095.	4095
24	cwspMinSvccVci	read-create	Minimum SVCC VCI configured on the interface, in the range 0 to 65535.	35
25	cwspMaxSvccVci	read-create	Maximum SVCC VCI configured on the interface, in the range 35 to 65535.	65535
26	cwspMinSvpcVpi	read-create	Minimum SVPC CPI configured on the interface, in the range 1 to 4095.	1
27	cwspMaxSvpcVpi	read-create	Maximum SVPC VPI configured on the interface, in the range 1 to 4095.	4095
28	cwspEnhancedIisp	read-create	Indicates if enhanced features for IISP are either enabled or disabled.	false
29	cwspConfigTableRowStatus	read-create	Used to either create or delete the interface.	
30	cwspAddrPlanSupported	read-create	The ATM address plan supported on an interface: 1 = both 2 = aesa 3 = e164  This can only be modified if interface is public UNI. For all other interfaces, the value is aesa.	aesa(2)
31	cwspIImiSecureLink	read-create	Indicates whether ILMI Secure Link Protocol is enabled or disabled. When secure link protocol is enabled, loss in ILMI connectivity is treated as loss of attachment point which results in all SVCs/SVPs being released on the interface.	true

Table D-11 Interface Configuration Table Entries (continued)

No	Object Type	Access	Description	Default
32	cwspIlmiAttachmentPoint	read-create	Indicates whether detection of loss of attachment procedures are enabled on this interface. When set to true, then standard ILMI procedures are employed to detect loss of attachment point. If set to false, then ILMI protocol on the interface does not detect the loss of attachment.	true
33	cwspIlmiLocalAttrStd	read-create	Indicates whether on modification of local attributes, procedures as recommended by ILMI 4.0 specification are followed or cisco proprietary procedures are followed. When set to true, the standard ILMI procedures are followed.	true
34	cwspIlmiUCSMEnable	read-create	Indicates whether ILMI user connection status monitoring is enabled or disabled.	true

### cwspCallStatsTable

The port call statistics table contains objects that show the statistics for SVC/SPVC calls on a specific interface.

Table D-12 Port Call Statistics Table Entries

No	Object Type	Access	Description	Default
1	cwspCountReset	read-write	Value to reset counters. Acceptable values are: <ul style="list-style-type: none"> <li>(noop)1 = none of the following</li> <li>(reset)2 = reset all counters</li> </ul>	noop
2	cwspInCallAttempts	read-only	Number of incoming signaling messages (setup and add party) received by the switching node on this interface for call establishment.	
3	cwspInCallEstabs	read-only	Number of incoming signaling messages (connect and add party ack) received by the switching node on this interface that indicate successful establishment of a call.	

**Table D-12 Port Call Statistics Table Entries (continued)**

No	Object Type	Access	Description	Default
4	cwspInCallFailures	read-only	Total number of failed incoming point-to-point (p2p) and point-to-multipoint(p2mp) SVC/SPVC call attempts on this interface.	
5	cwspInFilterFailures	read-only	Number of failed incoming point-to-point (p2p) and point-to-multipoint (p2mp) SVC/SPVC call attempts due to address filtering on this interface.	
6	cwspInRouteFailures	read-only	Number of failed incoming point-to-point (p2p) and point-to-multipoint (p2mp) SVC/SPVC call attempts on this interface due to route to the destination not available.	
7	cwspInResrcFailures	read-only	Number of failed incoming point-to-point (p2p) and point-to-multipoint (p2mp) SVC/SPVC call attempts on this interface due to insufficient resources, as requested in the call parameters.	
8	cwspInTimerFailures	read-only	Number of signaling timers timed out for incoming point-to-point (p2p) and point-to-multipoint (p2mp) SVC/SPVC calls on this interface.	
9	cwspInCrankbacks	read-only	Number of crankback IEs received on this interface for incoming point-to-point (p2p) and point-to-multipoint (p2mp) SVC/SPVC call attempts.	
10	cwspOutCallAttempts	read-only	Number of outgoing signaling messages (setup and add party) on this interface for call establishment.	
11	cwspOutCallEstabs	read-only	Number of outgoing signaling messages (connect and add party ack) that mark the call being established on this interface.	

**Table D-12 Port Call Statistics Table Entries (continued)**

No	Object Type	Access	Description	Default
12	cwspOutCallFailures	read-only	Number of failed outgoing signaling messages for point-to-point (p2p) and point-to-multipoint (p2mp) call establishment on this interface.	
13	cwspOutFilterFailures	read-only	Number of failed outgoing signaling messages for call establishment on this interface, due to address filtering.	
14	cwspOutRouteFailures	read-only	Number of failed outgoing signaling messages for call establishment on this interface, due to unavailable route.	
15	cwspOutResrcFailures	read-only	Number of failed outgoing signaling messages for call establishment on this interface, due to unavailable resources.	
16	cwspOutTimerFailures	read-only	Number of signaling timers timed-out on this interface for outgoing signaling messages.	
17	cwspOutCrankbacks	read-only	Number of crankback IEs sent on this interface for outgoing signaling release messages. This is generated on the node that generates the crankback IEs.	

**cwspCacConfigTable**

The port CAC configuration table specifies the CAC information for each interface on the PNNI Controller.

**Table D-13 Port CAC Configuration Table Entries**

No.	Object Type	Access	Description	Default
1	cwspUtilFactorCbr	read-write	Booking factor for CBR services, in the range 1 to 200.	100
2	cwspUtilFactorRtVbr	read-write	Booking factor for real-time VBR service, in the range 1 to 200.	100
3	cwspUtilFactorNrtVbr	read-write	Booking factor for non-real-time VBR service, in the range 1 to 200.	100
4	cwspUtilFactorAbr	read-write	Booking factor for ABR service, in the range 1 to 200.	100



Table D-13 Port CAC Configuration Table Entries (continued)

No.	Object Type	Access	Description	Default
5	cwspUtilFactorUbr	read-write	Booking factor for UBR service, in the range 1 to 200.	100
6	cwspMaxBwCbr	read-write	Maximum percentage bandwidth for CBR service, in the range 0 to 10000000.  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	1000000
7	cwspMaxBwRtVbr	read-write	Maximum percentage bandwidth for real-time VBR service, in the range 0 to 1000000.  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	1000000
8	cwspMaxBwNrtVbr	read-write	Maximum percentage bandwidth for non-real-time VBR service, in the range 0 to 1000000.  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	1000000
9	cwspMaxBwAbr	read-write	Maximum percentage bandwidth for ABR service, in the range 0 to 1000000.  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	1000000
10	cwspMaxBwUbr	read-write	Maximum percentage bandwidth for UBR service, in the range 0 to 1000000.  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	1000000
11	cwspMinBwCbr	read-write	Minimum percentage bandwidth for CBR, in the range 0 to 1000000.  The total values of cwspMinBwCbr, cwspMinBwRtVbr, cwspMinBwNrtVbr, cwspMinBwAbr and cwspMinBwUbr can not exceed 1000000(100%).  The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.	0

Table D-13 Port CAC Configuration Table Entries (continued)

No.	Object Type	Access	Description	Default
12	cwspMinBwRtVbr	read-write	<p>Minimum percentage bandwidth for VBR, in the range 0 to 1000000.</p> <p>The total values of cwspMinBwCbr, cwspMinBwRtVbr, cwspMinBwNrtVbr, cwspMinBwAbr and cwspMinBwUbr can not exceed 1000000(100%).</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
13	cwspMinBwNrtVbr	read-write	<p>Minimum percentage bandwidth for non-real-time VBR, in the range 0 to 1000000.</p> <p>The total values of cwspMinBwCbr, cwspMinBwRtVbr, cwspMinBwNrtVbr, cwspMinBwAbr and cwspMinBwUbr can not exceed 1000000(100%).</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
14	cwspMinBwAbr	read-write	<p>Minimum percentage bandwidth for ABR, in the range 0 to 1000000.</p> <p>The total values of cwspMinBwCbr, cwspMinBwRtVbr, cwspMinBwNrtVbr, cwspMinBwAbr and cwspMinBwUbr can not exceed 1000000(100%).</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
15	cwspMinBwUbr	read-write	<p>Minimum percentage bandwidth for UBR. This value is always 0.</p>	
16	cwspMaxVcCbr	read-write	<p>Maximum number of VCs for CBR service percentage, in the range 0 to 1000000.</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	1000000
17	cwspMaxVcRtVbr	read-write	<p>Maximum number of VCs for real-time VBR service percentage, in the range 0 to 1000000.</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	1000000

Table D-13 Port CAC Configuration Table Entries (continued)

No.	Object Type	Access	Description	Default
18	cwspMaxVcNrtVbr	read-write	<p>Maximum number of VCs for non-real-time VBR service percentage, in the range 0 to 1000000.</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	1000000
19	cwspMaxVcAbr	read-write	<p>Maximum number of VCs for ABR service percentage, in the range 0 to 1000000.</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	1000000
20	cwspMaxVcUbr	read-write	<p>Maximum number of VCs for UBR service percentage, in the range 0 to 1000000.</p> <p>The value of this variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	1000000
21	cwspMinVcCbr	read-write	<p>Minimum number of VCs for CBR service percentage, in the range 0 to 1000000.</p> <p>The value of this values of cwspMinVcCbr, cwspMinVcRtVbr, cwspMinVcNrtVbr, cwspMinVcAbr and cwspMinVcUbr can not exceed 1000000(100%).</p> <p>This variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
22	cwspMinVcRtVbr	read-write	<p>Minimum number of VCs for real-time VBR service percentage, in the range 0 to 1000000.</p> <p>The value of this values of cwspMinVcCbr, cwspMinVcRtVbr, cwspMinVcNrtVbr, cwspMinVcAbr and cwspMinVcUbr can not exceed 1000000(100%).</p> <p>This variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
23	cwspMinVcNrtVbr	read-write	<p>Minimum number of VCs for non-real-time VBR service percentage, in the range 0 to 1000000.</p> <p>The value of this values of cwspMinVcCbr, cwspMinVcRtVbr, cwspMinVcNrtVbr, cwspMinVcAbr and cwspMinVcUbr can not exceed 1000000(100%).</p> <p>This variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0

Table D-13 Port CAC Configuration Table Entries (continued)

No.	Object Type	Access	Description	Default
24	cwspMinVcAbr	read-write	<p>Minimum number of VCs for ABR service percentage, in the range 0 to 1000000.</p> <p>The value of this values of cwspMinVcCbr, cwspMinVcRtVbr, cwspMinVcNrtVbr, cwspMinVcAbr and cwspMinVcUbr can not exceed 1000000(100%).</p> <p>This variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
25	cwspMinVcUbr	read-write	<p>Minimum number of VCs for UBR service percentage, in the range 0 to 1000000.</p> <p>The value of this values of cwspMinVcCbr, cwspMinVcRtVbr, cwspMinVcNrtVbr, cwspMinVcAbr and cwspMinVcUbr can not exceed 1000000(100%).</p> <p>This variable is interpreted in the format of xxx.xxxx. For example a value of 750000 is interpreted as 75.0000%.</p>	0
26	cwspMaxVcBwCbr	read-write	Maximum bandwidth allowed for CBR service on a VC, in the range 0 to 1000000.	0
27	cwspMaxVcBwRtVbr	read-write	Maximum bandwidth allowed for VBR service on a VC, in the range 0 to 1000000.	0
28	cwspMaxVcBwNrtVbr	read-write	Maximum bandwidth allowed for non-real-time VBR on a VC, in the range 0 to 1000000.	0
29	cwspMaxVcBwAbr	read-write	Maximum bandwidth allowed for ABR service on a VC, in the range 0 to 1000000.	0
30	cwspMaxVcBwUbr	read-write	Maximum bandwidth allowed for UBR service, in the range 0 to 1000000.	0
31	cwspDefaultCdvCbr	read-write	Default CDVT for CBR service, in the range 0 to 2147483647.	1024
32	cwspDefaultCdvRtVbr	read-write	Default CDVT real-time VBR service, in the range 0 to 2147483647.	1024
33	cwspDefaultCdvNrtVbr	read-write	Default CDVT non-real-time VBR service, in the range 0 to 2147483647.	1024
34	cwspDefaultCdvAbr	read-write	Default CDVT for ABR service, in the range 0 to 2147483647.	1024
35	cwspDefaultCdvUbr	read-write	Default CDVT for UBR service, in the range 0 to 2147483647.	1024

**Table D-13 Port CAC Configuration Table Entries (continued)**

No.	Object Type	Access	Description	Default
36	cwspDefaultMbsRtVbr	read-write	Default MBS real-time VBR service, in the range 0 to 2147483647.	1024
37	cwspDefaultMbsNrtVbr	read-write	Default MBS non-real-time VBR service, in the range 0 to 2147483647.	1024

**cwspSigStatsTable**

The port signaling statistics table contains signaling statistics counters.

**Table D-14 Port Signaling Statistics Table Entries**

No.	Object Type	Access	Description	Default
1	cwspSigCounterReset	read-write	Determines resetting of counters: <ul style="list-style-type: none"> <li>1 (noop) = None of the following</li> <li>2 (reset) = Resetting</li> </ul>	noop(1)
2	cwspCallProcRcv	read-only	Number of CALL PROCEEDING messages received on this interface	
3	cwspConnectRcv	read-only	Number of CONNECT messages received on this interface	
4	cwspConnectAckRcv	read-only	Number of CONNECT ACK messages received on this interface	
5	cwspSetupRcv	read-only	Number of SETUP messages received on this interface	
6	cwspReleaseRcv	read-only	Number of RELEASE messages received on this interface	
7	cwspReleaseComplRcv	read-only	Number of RELEASE COMPLETE messages received on this interface.	
8	cwspRestartRcv	read-only	Number of RESTART messages received on this interface.	
9	cwspRestartAckRcv	read-only	Number of RESTART ACK messages received on this interface.	
10	cwspStatusRcv	read-only	Number of STATUS messages received on this interface.	
11	cwspStatusEngRcv	read-only	Number of STATUS ENQUIRY messages received on this interface.	
12	cwspNotifyRcv	read-only	Number of NOTIFY messages received on this interface.	
13	cwspAlertRcv	read-only	Number of ALERT messages received on this interface.	
14	cwspProgressRcv	read-only	Number of PROGRESS messages received on this interface.	
15	cwspAddPtyRcv	read-only	Number of ADD PARTY messages received on this interface.	
16	cwspAddPtyAckRcv	read-only	Number of ADD PARTY ACK messages received on this interface.	
17	cwspAddPtyRejRcv	read-only	Number of ADD PARTY reject messages received on this interface.	
18	cwspDropPtyRcv	read-only	Number of DROP PARTY messages received on this interface.	
20	cwspIncorrectMsgRcv	read-only	Number of incorrect messages received on this interface.	

Table D-14 Port Signaling Statistics Table Entries (continued)

No.	Object Type	Access	Description	Default
21	cwspTimerExpires	read-only	Number of timeouts that have occurred on this interface.	
22	cwspLastCause	read-only	Indicates last cause of release or crankback.	
23	cwspLastDiagnostic	read-only	Indicates the last diagnostic of release or crankback.	
24	cwspCallProcXmt	read-only	Number of CALL PROCEEDING messages transmitted from this interface.	
25	cwspConnectXmt	read-only	Number of CONNECT messages transmitted from this interface.	
26	cwspConnectAckXmt	read-only	Number of CONNECT ACK messages transmitted from this interface.	
27	cwspSetupXmt	read-only	Number of SETUP messages transmitted from this interface.	
28	cwspReleaseXmt	read-only	Number of RELEASE messages transmitted from this interface.	
29	cwspReleaseComplXmt	read-only	Number of RELEASE COMPLETE messages transmitted from this interface.	
30	cwspRestartXmt	read-only	Number of RESTART messages transmitted from this interface.	
31	cwspRestartAckXmt	read-only	Number of RESTART ACK messages transmitted from this interface.	
32	cwspStatusXmt	read-only	Number of STATUS messages transmitted from this interface.	
33	cwspStatusEnqXmt	read-only	Number of STATUS ENQUIRY messages transmitted from this interface.	
34	cwspNotifyXmt	read-only	Number of NOTIFY messages transmitted from this interface.	
35	cwspAlertXmt	read-only	Number of ALERT messages transmitted from this interface.	
36	cwspProgressXmt	read-only	Number of PROGRESS messages transmitted from this interface.	
37	cwspAddPtyXmt	read-only	Number of ADD PARTY messages transmitted from this interface.	
38	cwspAddPtyAckXmt	read-only	Number of ADD PARTY ACK messages transmitted from this interface.	
39	cwspAddPtyRejXmt	read-only	Number of ADD PARTY REJECT messages transmitted from this interface.	
40	cwspDropPtyXmt	read-only	Number of DROP PARTY messages transmitted from this interface.	
42	cwspSscopStatus	read-only	SSCOP link status --up(1) or down(2) -- on an NNI interface, object is meaningful along with ciscoWANSscopLinkChange trap.	

**cwspAddressTable**

The port address table is the interface ATM address table. This table contains all attributes necessary to determine what the PNNI entity believes is reachable in terms of ATM End System Addresses and to determine which nod4es are advertising this reachability. This table is also used to configured static routes to reachable addresses. Entries in this table can be created/deleted by setting the cwspAddressRowsStatus object to createAndGo/detrory values. Existing entries in this table cannot modified. Entries in this table can also be created/deleted through the command provided in the CLI.

**Note**

Use createAndGo to create a row and use destroy to delete a row. The managed device will return either active or notInService for a row status.

**Table D-15 Port Address Table Entries**

No.	Object Type	Access	Description	Default
1	cwspAtmAddress	not-accessible	Value of the ATM end-system address.	
2	cwspAddrLen	not-accessible	Address length, in bits in range 0 to 160, to be applied to the ATM end-system address.	
3	cwspAddrType	read-create	Type of reachability from the advertising node to the address. Options are: <ul style="list-style-type: none"> <li>internal(1)</li> <li>exterior(2)</li> </ul> Reference: ATM Forum PNNI 1.0 Section 5.8.1.3	exterior(2)
4	cwspAddrProto	read-create	Routing mechanism by which the connectivity from the advertising node to the reachable address is learned. Options are: <ul style="list-style-type: none"> <li>local(1)</li> <li>static(2)</li> </ul>	local(1)
5	cwspAddrPlan	read-create	Address plan. Options are: <ul style="list-style-type: none"> <li>e164(1)</li> <li>nsap(2)</li> </ul> For NSAP address, the first byte of the address automatically implies one of the following NSAP address plans: <ul style="list-style-type: none"> <li>NSAP E.164</li> <li>NSAP DCC</li> <li>NSAP ICD</li> </ul>	nsap(2)
6	cwspAddrScope	read-create	PNNI scope of advertisement (level of PNNI hierarchy) of the reachability from the advertising node to the address, in the range 0 to 104.	0

Table D-15 Port Address Table Entries (continued)

No.	Object Type	Access	Description	Default
7	cwspAddrRedistribute	read-create	<p>Defines if the reachable address specified by this entry is to be advertised by the local node into its PNNI routing domain. Options are:</p> <ul style="list-style-type: none"> <li>• true(1)</li> <li>• false(2)</li> </ul> <p>This object is meaningful only if the routing mechanism (cwspAddrProto) is static.</p>	false(2)
8	cwspAddressRowStatus	read-create	Create or delete a reachable address	

### cwspLoadTable

The port loading table specifies the load/cwsp information for each interface on the PNNI Controller.

Table D-16 Port Loading Table Entries

No.	Object Type	Access	Description
1	cwspLoadBwTotal	read-only	Total bandwidth of the interface, in the range 0 to 2147483647
2	cwspLoadMaxBwCbr	read-only	Maximum bandwidth for CBR service, in the range 0 to 2147483647.
3	cwspLoadMaxBwRtVbr	read-only	Maximum bandwidth for real-time VBR service, in the range 0 to 2147483647.
4	cwspLoadMaxBwNrtVbr	read-only	Maximum bandwidth for non-real time VBR service, in the range 0 to 2147483647.
5	cwspLoadMaxBwAbr	read-only	Maximum bandwidth for ABR service, in the range 0 to 2147483647.
6	cwspLoadMaxBwUbr	read-only	Maximum bandwidth for UBR service, in the range 0 to 2147483647.
7	cwspLoadBwAvail	read-only	Total available bandwidth of the interface, in the range 0 to 2147483647.
8	cwspLoadAvlBwCbr	read-only	Available bandwidth for CBR service, in the range 0 to 2147483647.
9	cwspLoadAvlBwRtVbr	read-only	Available bandwidth for real time VBR service, in the range 0 to 2147483647.
10	cwspLoadAvlBwNrtVbr	read-only	Available bandwidth for non-real time VBR service, in the range 0 to 2147483647.
11	cwspLoadAvlBwAbr	read-only	Available bandwidth for ABR service, in the range 0 to 2147483647.
12	cwspLoadAvlBwUbr	read-only	Available bandwidth for UBR service, in the range 0 to 2147483647.
13	cwspLoadVcAvail	read-only	Total number of available VCs of the interface, in the range 0 to 2147483647.
14	cwspLoadAvlVcCbr	read-only	Number of VCs used by CBR service, in the range 0 to 2147483647.
15	cwspLoadAvlRtVbr	read-only	Number of VCs used by real-time VBR service, in the range 0 to 2147483647.
16	cwspLoadAvlVcNrtVbr	read-only	Number of VCs used by non-real time VBR service, in the range 0 to 2147483647.
17	cwspLoadAvlVcAbr	read-only	Number of VCs used by ABR service, in the range 0 to 2147483647.



Table D-16 Port Loading Table Entries (continued)

No.	Object Type	Access	Description
18	cwspLoadAvlVcUbr	read-only	Number of VCs used by UBR service, in the range 0 to 2147483647.
19	cwspLoadCtdCbr	read-only	Cell transfer delay of CBR service, in the range 0 to 2147483647.
20	cwspLoadCtdRtVbr	read-only	Cell transfer delay of real-time VBR service, in the range 0 to 2147483647.
21	cwspLoadCtdNrtVbr	read-only	Cell transfer delay of non-real time VBR service, in the range 0 to 2147483647.
22	cwspLoadCtdAbr	read-only	Cell transfer delay of ABR service, in the range 0 to 2147483647.
23	cwspLoadCtdUbr	read-only	Cell transfer delay of UBR service, in the range 0 to 2147483647.
24	cwspLoadCdvCbr	read-only	Cell delay variation of CBR service, in the range 0 to 2147483647.
25	cwspLoadCdrRtVbr	read-only	Cell delay variation of real-time VBR service, in the range 0 to 2147483647.
26	cwspLoadCdvNrtVbr	read-only	Cell delay variation of non-real time VBR service, in the range 0 to 2147483647.
27	cwspLoadCdvAbr	read-only	Cell delay variation of ABR service, in the range 0 to 2147483647.
28	cwspLoadCdvUbr	read-only	Cell delay variation of UBR service, in the range 0 to 2147483647.
29	cwspLoadClr0Cbr	read-only	Cell loss ratio -0 of CBR service. -1 implies N/A.
30	cwspLoadClr0RtVbr	read-only	Cell loss ratio -0 of CBR service. -1 implies N/A.
31	cwspLoadClr0NrtVbr	read-only	Cell loss ratio -0 of non-real time VBR service. -1 implies N/A.
32	cwspLoadClr0Abr	read-only	Cell loss ratio -0 of ABR service. -1 implies N/A.
33	cwspLoadClr0Ubr	read-only	Cell loss ratio -0 of UBR service. -1 implies N/A.
34	cwspLoadClr01Cbr	read-only	Cell loss ratio -0 of CBR service. -1 implies N/A.
35	cwspLoadClr01RtVbr	read-only	Cell loss ratio-1 of real time VBR service. -1 implies N/A.
36	cwspLoadClr01NrtVbr	read-only	Cell loss ratio-1 of non-real time VBR service. -1 implies N/A.
37	cwspLoadClr01Abr	read-only	Cell loss ratio -1 of ABR service. -1 implies N/A.
38	cwspLoadClr01Ubr	read-only	Cell loss ratio-1 of UBR service. -1 implies N/A.
39	cwspLoadMinGurCrCbr	read-only	Minimum guaranteed cell rate capacity of CBR service, in the range 0 to 2147483647.
40	cwspLoadMinGurCrRtVbr	read-only	Minimum guaranteed cell rate capacity of real time VBR service, in the range 0 to 2147483647.
41	cwspLoadMinGurCrNrtVbr	read-only	Minimum guaranteed cell rate capacity of non-real time VBR service, in the range 0 to 2147483647.
42	cwspLoadMinGurCrAbr	read-only	Minimum guaranteed cell rate capacity of ABR service, in the range 0 to 2147483647.
43	cwspLoadMinGurCrUbr	read-only	Minimum guaranteed cell rate capacity of UBR service.

## cwspConnTrace

Collection of objects that provide trace information about SVC/PNNI Connections.

- cwspConnTraceAvail
- cwspConnTraceCntlTable
- cwspConnTraceTable

### cwspConnTraceAvail

**Table D-17 Port Connection Trace Availability Entry**

No.	Object Type	Access	Description
1	cwspConnTraceAvail	read-only	Number of calls that can be traced concurrently. Depending on the system resource, this object may vary from time to time. NMS should query this object to ensure there is a system resource available before creating a row in the cwspConnTraceCntlTable.

### cwspConnTraceNextIndex

**Table D-18 Port Connection Trace If Index Entry**

No.	Object Type	Access	Description
2	cwspConnTraceNextIndex	read-only	NMS queries this object to obtain the index value to be used row creation.

### cwspConnTraceCntlTable

**Table D-19 Port Connection Trace Control Table Entry**

No.	Object Type	Access	Description
3	cwspConnTraceCntlTable		This Table contains the objects which control the creation of connection trace for the existing SVC call.

### ConnTraceCntlTable

**Table D-20 Port Connection Trace Control Table Entries**

No.	Object Type	Access	Description
1	cwspConnTraceIndex	not-accessible	This greater than 0 object is the index for a row to create connection trace.
2	cwspConnTraceifIndex	read-create	Equivalent to ifIndex for the port to trace connection. <i>ifIndex</i> is used as a reference to create a row which represents an existing connection.
3	cwspConnTraceSrcVpi	read-create	Shows the VPI value of the starting point on this interface in the range 0 to 4095.

Table D-20 Port Connection Trace Control Table Entries (continued)

No.	Object Type	Access	Description
4	cwspConnTraceSrcVci	read-create	Shows The VCI value of the starting point on this interface, in the range 32 - 65535. 0 = SPVP
5	cwspConnTraceType	read-create	Specifies tracing, as either p2p(1) or p2mp(2), on a p2p or p2mp connection
6	cwspConnTraceCallRef	read-only	Shows the Call Reference value of the call on this interface.
7	cwspConnTraceLeafRef	read-create	Shows the value, in the range 0 to 65535, of the Leaf Reference (EndPointReference) of the Call on this interface, this value is used to support p2mp call trace. For p2p call, this value should be set as 0 by NMS.
8	cwspConnTraceDestVpi	read-only	This object shows the endpoint VPI value of the call on this interface.
9	cwspConnTraceDestVci	read-only	This object shows the endpoint VCI value of the call on this interface.
10	cwspConnTraceDestCallRef	read-only	This object shows the endpoint call reference on this interface.
11	cwspConnTraceResultStatus	read-only	This object shows the result of tracing the call. NMS should get positive result (for example, traceCompleted(2) for this attribute before querying the cwspConnTraceTable. Options are: <ul style="list-style-type: none"> <li>• traceInProgress(1),</li> <li>• traceCompleted(2),</li> <li>• traceIncompleted(3),</li> <li>• traceExceededLength(4),</li> <li>• traceContRefused(5),</li> <li>• traceLackResource(6)</li> </ul>
12	cwspConnTraceQueryStatus	read-create	This object used to manage rows in this table. However, only CreateAndGo, NotInService, Active, and Destroy are supported. NMS should only set value to be CreateAndGo to startup the trace. To remove a row, NMS set this value to be Destroy. The managed device will either return Active or NotInService.

## Port Connection Data Table

Table D-21 contains the objects which show the traversed node information in the existing SVC call.

**Table D-21 Port Connection Data Table**

No.	Object Type	Access	Description
1	cwspConnTraceEntry	not-accessible	Along with cwspConnTraceIndex, this object specified an unique entry in the cwspConnTraceTable
2	cwspConnTraceNodeId	read-only	Octet string representing 22 bytes nodeId in the traced connection
3	cwspConnTraceEgressPortId	read-only	Represents 4 bytes logical port ID of the traversed node. When 0 is specified, the destination node for the trace is reached.
4	cwspConnTraceEgressVpi	read-only	Egress port's VPI value for the traced connection.
5	cwspConnTraceEgressVci	read-only	Egress port's VCI value for the traced connection.
6	cwspConnTraceEgressCallRef	read-only	Egress port's call reference.
7	cwspConnTraceEgressPhyPortId	read-only	Egress port's physical port Identifier for the traversed node; if this object is 0 meaning that the destination node for the traced connection has been reached. The meaning for the bytes are: <ul style="list-style-type: none"> <li>• first byte = flag (used by CLI to decode the rest of bytes)</li> <li>• 2 nd byte = shelf</li> <li>• 3rd &amp; 4th bytes = slot</li> <li>• 5th byte = subslot</li> <li>• 6th &amp; 7th bytes = port</li> <li>• 8th byte= subport</li> </ul>

**cwspOperationTable**

The interface operation table contains the runtime negotiated values between platform, PNNI controller, and peer on an interface.

**Table D-22 Interface Operation Table Entries**

No	Object Type	Access	Description
1	cwspOperIlmiEnable	read-only	Operational state of ILMI
2	cwspOperIfcType	read-only	Interface type. Options are: <ul style="list-style-type: none"> <li>• publicUni(1)</li> <li>• privateUni(2)</li> <li>• iisp(3)</li> <li>• pnni(4)</li> <li>• aini(5)</li> <li>• enni(6)</li> </ul>
3	cwspOperIfcSide	read-only	The IME type of the ATM device which is concluded from automatic interface type determination procedure. <ul style="list-style-type: none"> <li>• userSide(1)</li> <li>• networkSide(2)</li> <li>• symmetric(3)</li> </ul> Reference: ATM Forum ILMI 4.0 Section 8.3.4.1
4	cwspOperMaxVPCs	read-only	Maximum number of switched and permanent VPCs supported.
5	cwspOperMaxVCCs	read-only	Maximum number of switched and permanent VCCs supported.
6	cwspOperMaxVpiBits	read-only	Maximum number of active VPI bits on this ATM interface.
7	cwspOperMaxVciBits	read-only	Maximum number of active VCI bits on this ATM interface.
8	cwspOperUniType	read-only	ATM device type, either public(1) or private(2).

Table D-22 Interface Operation Table Entries (continued)

No	Object Type	Access	Description
9	cwspOperUniVersion	read-only	<p>Displays current version of the ATM Forum UNI Signaling Specification supported. The values are:</p> <ul style="list-style-type: none"> <li>• version2point0(1)</li> <li>• version3poing0(2)</li> <li>• version3poing1(3)</li> <li>• version4poing0(4)</li> <li>• unsupported(5)</li> </ul> <p>If no value is present, a version of the UNI earlier than 3.1 is supported.</p> <p>If the peer IME value of this object identical, or later, the version corresponding to the local IME value should then be attempted.</p> <p>If the peer IME value of this object is earlier, and supported locally, the local IME should then attempt the version corresponding to the peer IME value.</p> <p>If neither of the above two consideration are present, compatibility of the two IMEs cannot be assumed.</p>
10	cwspOperDeviceType	read-only	<p>Determines ATM device type. This object is used in automatic ATM Interface-Type determination procedure, such that a correct operational ATM Interface type can be determined. An ATM End System shall take the value of user(1), and an ATM network node shall take the value of node(2).</p>
11	cwspOperIlmiVersion	read-only	<p>An indication of the latest version of the ATM Forum ILMI Specification that is supported on this ATM Interface. The values are:</p> <ul style="list-style-type: none"> <li>• unsupported(1)</li> <li>• version4point0(2)</li> </ul> <p>If this object is not present, a version of the ILMI earlier than 4.0 is supported.</p> <p>If the peer IME value of this object identical, or later, the version corresponding to the local IME value should then be attempted.</p> <p>If the peer IME value of this object is earlier, and supported locally, the local IME should then attempt the version corresponding to the peer IME value.</p> <p>If neither of the above two consideration are present, compatibility of the two IMEs cannot be assumed.</p>

Table D-22 Interface Operation Table Entries (continued)

No	Object Type	Access	Description
12	cwspOperNniSigVersion	read-only	Indicates the latest version of the ATM Forum PNNI signaling specification that is supported in this ATM interface. The supported versions are: <ul style="list-style-type: none"> <li>• undsupported(1)</li> <li>• iisp(2)</li> <li>• pnniVersion1point0(3)</li> <li>• enni(4)</li> </ul> <b>Note</b> The PNNI routing version is not determined through ILMI.
13	cwspOperMaxSvpcVpi	read-only	Maximum switched VPC VPI.
14	cwspOperMinSvpcVpi	read-only	Minimum switched VPC VPI.
15	cwspOperMaxSvccVpi	read-only	Maximum switched VCC VPI.
16	cwspOperMinSvccVpi	read-only	Minimum switched VCC VPI.
17	cwspOperMaxSvccVci	read-only	Maximum switched VCC VCI.
18	cwspOperMinSvccVci	read-only	Minimum switched VCC VCI.
19	cwspOperAddrPlanSupported	read-only	The ATM address plan supported on a public UNI. The values are: <ul style="list-style-type: none"> <li>• both(1)</li> <li>• aesa(2)</li> <li>• e164(3)</li> </ul> For all other interfaces, the value is aesa(2).

## Cisco WAN ATM MIB Objects

- cwAtmChanCfgTable
- cwAtmChanStateTable
- cwAtmChanTestTable

## cwAtmChanCfgTable

Each entry in the cwAtmChanCfgEntry table corresponds to an endpoint on the PNNI Controller.

**Table D-23 cwAtmChanCfgTable**

No.	Object Type	Access	Description	Default
1	cwaChanVpi	not-accessible	The VPI value of a VP or VC connection in range of 0 and 4095. The cwaChanVpcFlag serves to distinguish if this is a VP / VC connection	
2	cwaChanVci	not-accessible	The VCI value of a VC connection in range of 0 and 65535. The cwaChanVpcFlag serves to distinguish if this is a VP / VC connection. For a VPC, the VCI is irrelevant and is set to a value of -2.	
3	cwaChanServiceCategory	read-create	Identifies the service type to which this connection belongs. The service type specified is one among the ATM Forum service types and implicitly determines the configuration for GCRA.	
4	cwaChanVpcFlag	read-create	Identifies if the endpoint is a VP / VC endpoint. When set to true (1) this implies a VP endpoint.	
5	cwaChanIdentifier	read-only	Uniquely identifies a connection within a physical entity (such as a service card). This object can be used as a quick reference index between the network management server and the switch. The range is 0..524287.	
6	cwaChanUploadCounter	read-only	A set of a value of 1: when the row is created for a channel and is incremented whenever there is a configuration change to the row. This counter is used by the NMS to determine if a row in the table had been modified and requires an upload. This function is conventionally achieved by using timestamp. However, in certain implementations, where storage is at a premium, the use of counter rather than a timer tick can be an advantage. For example, a 4-bit counter incremented only during row modification serves the same purpose of a 32-bit timestamp. The range is 0..4294967295.	
7	cwachanStatsEnable	read-create	Limits imposed by software or hardware implementations could restrict the amount of statistical data that can be maintained in a physical entity (such as a service module). Hence there could be a need to restrict statistics collection to a smaller subset. This object serves the purpose of enabling or disabling statistics collection on a per connection basis. In implementations that do not have such limitations, this object can be set to true(1) for all connections.	false(2)



Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
8	cwaChanCCEnable	read-create	Serves to enable or disable continuity check (CC) on a connection endpoint. When continuity check is enabled on an endpoint, the endpoint anticipates OAM CC cells from its peer endpoint. OAM CC cells are sent when the peer endpoint does not have traffic cells to send. If the connection is idle and this endpoint has not received OAM CC cells for a period of 3.5 +/- 0.5 seconds, it declares continuity failure. This object serves to administratively control the CC feature. Typical implementations of this feature may choose to ignore this control or impose other conditions to actually enable CC cell flow. However, if this object is set to false (2), then this feature should be disabled.	false(2)
9	cwaChanLocalVpi	read-only	Identifies the internal VPI assigned to a local endpoint, by the switch. The cwaChanLocalVpi, cwaChanLocalVci and the cwaChanLocalINSAPAddr, form a unique identifier for the connection endpoint in the networking domain. The value is in the range of 0 and 4095.	
10	cwaChanLocalVci	read-only	Identifies the internal VCI assigned to a local endpoint by the switch. The cwaChanLocalVpi, cwaChanLocalVci, and the cwaChanLocalINSAPAddr, form a unique identifier for the connection endpoint in the networking domain. Then value is in the range of 0 and 65535.	
11	cwaChanLocalINSAPAddr	read-only	Identifies the internal NSAP assigned to a local endpoint by the switch. The cwaChanLocalVpi, cwaChanLocalVci, and the cwaChanLocalINSAPAddr, form a unique identifier for the connection endpoint in the networking domain.	
12	cwaChanRemoteVpi	read-create	Identifies the VPI of the peer endpoint. The cwaChanRemoteVpi, cwaChanRemoteVpi, and the cwaChanRemoteNSAPAddr identify the peer endpoint in the networking domain. The value is in the range of 0 and 4095.	
13	cwaChanRemoteVci	read-create	Identifies the VCI of the peer endpoint. The cwaChanRemoteVpi, cwaChanRemoteVpi, and the cwaChanRemoteNSAPAddr, identify the peer endpoint in the networking domain. The value is in the range of 0 and 65535.	
14	cwaChanRemoteNSAPAddr	read-create	Identifies the NSAP of the peer endpoint. The cwaChanRemoteVpi, cwaChanRemoteVpi, and the cwaChanRemoteNSAPAddr identify the peer endpoint in the networking domain.	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
15	cwaChanControllerId	read-create	This object serves to associate an endpoint with a specific controller. Usually resource partitioning makes the association between a controller and a range of VPI-VCI. There could be switches where hard partitioning of VPI-VCI may not be implemented, in which case this object serves to tie a specific vpi-vci to a controller. The range is 1..255. The default is 2.	1
16	cwaChanRoutingMastership	read-create	If set to true(1), identifies this endpoint as the 'master' endpoint of the connection.  The networking entity initiates routing of a PVC connection only after a master endpoint is added. Mastership of a PVC cannot be changed, once provisioned, which implies that this object can be set only during row creation.	false (2)
17	cwaChanMaxCost	read-create	Used by the routing entity to select a route based on the cost factor. The cost of a route is represented as a number between 1 and 65535. The value of this object represents the maximum cost of the route that this connection could be routed through. The range is 0..4294967295. The default is 'FFFFFFFF'h(4294967295).	100
18	cwaChanReroute	read-create	Used by the administrator to trigger the rerouting of the connection <ul style="list-style-type: none"> <li>Rerouting takes effect when this object is set to true(1). When set to false(2) rerouting does not occur.</li> <li>A GET on this object always returns false(2).</li> <li>If setting cwaChanReroute, other MIB objects should not be SET except for the RowStatus.</li> <li>Reroute can be triggered only from the master endpoint. Any attempt to trigger reroute from the slave endpoint results in failure of the SET operation.</li> </ul>	false (2)
19	cwaChanFrameDiscard	read-create	If set to true(1), enables the frame discard feature at the endpoint.	false (2)
20	cwaChanOperStatus	read-only	Reflects operational status of an endpoint. <ul style="list-style-type: none"> <li>If the connection is not routed or if the endpoint receives AIS/RDI, or if there is a CC failure, this object is SET to OperFail (2)</li> <li>If the connection is administratively down, this object is SET to adminDown (3)</li> <li>If normal operations, this object is SET to operOk(1)</li> </ul>	
21	cwaChanPCR	read-create	Peak cell rate for the direction from local to remote. The value is in the range 7 to 23000000.	
22	cwaChanMCR	read-create	Maximum cell rate for the direction from local to remote. The value is in the range 7 to 2300000.	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
23	cwaChanSCR	read-create	Sustainable cell rate fro the direction from local to remote. The value is in the range 7 to 2300000.	
24	cwaChanCDV	read-create	Maximum tolerable cell delay variation in the direction from local to remote.  A value of 16777215 indicates to the switch that this parameter does not have significance in SPVC call setup. The range is 1..16777215. The default is 'FFFFFF'h(166777215). The unit of this variable is "microseconds".	16777215
25	cwaChanCTD	read-create	Maximum tolerable network transfer delay in the direction from local to remote. The value is in the range 1 to 65535. The default is 'FFFF'h(65535).  The unit of this variable is "milliseconds".	
26	cwaChanMBS	read-create	Maximum Burst Size used in the direction from local to remote. The value is in the range 1 to 5000000.  The unit of this variable is in cells.  Reference: ATM Forum Traffic Management Specification Version 4.0 Annex C.	
27	cwaChanCDVT	read-create	Cell delay variation tolerance used in the direction from local to remote. The value is in the range 1 to 4294967295. The default is 4294967295. The unit of this variable is in microseconds.  Reference: ATM Forum Traffic Management Specification Version 4.0 Annex C.	
28	cwaChanPercentUtil	read-create	Provides a per-connection control for overbooking bandwidth. Used in conjunction with the VSI interface policy while performing CAC. This is applied for the direction from local to remote. The value is in range 0 to 100.	100
29	cwaChanRemotePCR	read-create	Peak cell rate for the direction from remote to local. The value is in range 7 to 23000000. The unit of this variable is in cells per second.	
30	cwaChanRemoteMCR	read-create	Minimum cell rate for the direction from remote to local. The value is in range 7 to 23000000. The unit of this variable is in cells per second.	
31	cwaChanRemoteSCR	read-create	Sustainable cell rate for the direction from remote to local. The value is in range 7 to 23000000. The unit of this variable is in cells per second.	
32	cwaChanRemoteCDV	read-create	Maximum tolerable cell delay variation for the direction from remote to local. The value is in range 1 to 16777215. The unit of this variable is in microseconds.  Reference: A value of 16777215 indicates to the switch that this parameter does not have significance in SPVC call setup.	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
33	cwaChanRemoteCTD	read-create	Maximum tolerable network transfer delay in the direction from remote to local. The value is in range 1 to 65535. The unit of this variable is in milliseconds. The default is 'FFFF'h(65535).	
34	cwaChanRemoteMBS	read-create	Maximum burst size used in the direction from remote to local. The value is in range 1 to 5000000. The unit of this variable is in cells.  Reference: ATM Forum Traffic Management Specification Version 4.0 Annex C	
35	cwaChanRemoteCDVT	read-create	Cell delay variation tolerance used in the direction from remote to local. The value is in range 1 to 5000000. The unit of this variable is in cells. The default is FFFFFFFF'h(4294967295).  The range is (1..4294967295).  Reference: ATM Forum Traffic Management Specification Version 4.0 Annex C.	
36	cwaChanRemotePercentUtil	read-create	Provides a per-connection control for overbooking bandwidth. Used in conjunction with the VSI interface policy while performing CAC. Applied in the direction from remote to local. The value is in range 0 to 100.	100
37	cwaChanAbrICR	read-create	Initial cell rate; rate at which a source should send initially after an idle period. This value must not be larger than that configured for PCR. The value is in range 7 to 23000000.  Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2	
38	cwaChanAbrADTF	read-create	Value for ACR decrease time factor, which is the time permitted between sending resource management (RC) cells before the rate is decreased to the initial cell rate (ICR). The value is in the range 1 to 1023, in the unit of 10 milliseconds.  Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.	
39	cwaChanAbrRDF	read-create	Value for rate decrease factor, which controls the rate decrease that occurs when backward RM-cells with CI set for 1 are received. Larger values lead to faster rate decreases.  Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
40	cwaChanAbrRIF	read-create	<p>Value for rate increase factor, which controls the rate increase that occurs when a backward RM-cell is received with CI set for 1, and NI set for 0.</p> <p>Larger values lead to faster rate increase.</p> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	
41	cwaChanAbrNRM	read-create	<p>Maximum number of cells a source may send for each forward RM-cell. Options are:</p> <ul style="list-style-type: none"> <li>• nrm2(1)</li> <li>• nrm4(2)</li> <li>• nrm8(3)</li> <li>• nrm16(4)</li> <li>• nrm32(5)</li> <li>• nrm64(6)</li> <li>• nrm128(7)</li> <li>• nrm256(8)</li> </ul> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	
42	cwaChanAbrTRM	read-create	<p>Number of milliseconds to represent upper bound on the time between forward RM-cells for an active source. Options are:</p> <ul style="list-style-type: none"> <li>• trm0point78125(1)</li> <li>• trm1point5625(2)</li> <li>• trm3point125(3)</li> <li>• trm6point25(4)</li> <li>• trm12point5(5)</li> <li>• trm25(6)</li> <li>• trm50(7)</li> <li>• trm100(8)</li> </ul> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
43	cwaChanAbrCDF	read-create	<p>Cutoff decrease factor, which controls the rate decrease associated with lost of delayed backward RM cells. Larger values result in faster rate decrease. Options are:</p> <ul style="list-style-type: none"> <li>• cdf0(1)</li> <li>• cdfOneOver64(2)</li> <li>• cdfOneOver32(3)</li> <li>• cdfOneOver16(4)</li> <li>• cdfOneOver8(5)</li> <li>• cdfOneOver4(6)</li> <li>• cdfOneOver2(7)</li> <li>• cdfOne(8)</li> </ul> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	
44	cwaChanAbrFRTT	read-create	<p>Number of milliseconds to represent fixed round trip time, which is the sum of the fixed propagation delays from the source to a destination network. The range is 0..16700000. The unit is in microseconds.</p> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	
45	cwaChandAbrTBE	read-create	<p>Transient buffer exposes, which is a negotiated number of cells to be limited over the network, between the time at which the source transmits during startup periods, and before the first RM cell returns. The range is 0..16777215.</p> <p>Reference: ATM Forum Traffic Management Specification Version 4.0 Section 5.10.2.</p>	
46	cwaChanAbrERS	read-create	Configuration of an endpoint for explicit rate stamping.	none
47	cwaChanAbrVSVDEnable	read-create	<p>ABR connections require close loop control to limit the transmission rate, depending on the network bandwidth. Now this close loop can be end-to-end or between intermediate network segments. When terminating on ABR VPL, the endpoint needs to act like a Virtual Destination to the incoming traffic and generate backward RM cells. While doing this, it also needs to act as a virtual source and forward RM cells to the real destination. This is a feature that can be enabled or disabled under the control of this object.</p> <p>When set to true(1), this feature is enabled.</p>	

Table D-23 cwAtmChanCfgTable (continued)

No.	Object Type	Access	Description	Default
48	cwaChanRowStatus	read-create	Used to create, modify, or delete an entry in the ciscoWanAtmChanTable. <ul style="list-style-type: none"> <li>A row may be created using the 'CreateAndGo' option. When the row is successfully create, the RowStatus would be set to 'active' by the agent.</li> <li>A row may be deleted by setting the RowStatus to 'destroy.'</li> <li>When there is a need to administratively down the connection, the RowStatus could be set to 'notInService.' When the switch completes the 'down' operation, the value of this object would be 'notInService.'</li> <li>The connection can be made active again, by setting this object to 'active.'</li> <li>Administrative status control is limited to the master endpoint only. The switch would reject any request for admin state change on the slave endpoint.</li> <li>Other options such as 'CreateAndWait' will not be used.'</li> </ul>	
49	cwaChanIntAbrVSVD	read-create	This object is used for enabling/disabling VSVD internal to a segment i.e the closed loop control is in effect between the two provisioned endpoints of the SPVC.(This object is not supported at this time.)	
50	waChanExtAbrVSVD	read-create	This object is used for enabling/disabling VSVD external to the segment which hosts the two endpoints of the SPVC i.e the closed loop control will be in effect outside the segment either towards a CPE or towards another segment.(This object is not supported at this time.)	
51	cwaChanAisIWCcapability	read-create	This object is used for achieving OAM inter-operability between switches that cannot generate/detect segment AIS cells. This attribute enables the newer generation of switches to understand the OAM capability of the peer endpoint and accordingly generate/detect seg/e2e AIS as required. The value of this attribute is decided during provisioning time by network management. The values are: e2eAisCapable(1) and segAisCapable(2).	e2eAisCapable(1)
52	cwaChanCLR	read-create	Encoded value representing the maximum tolerable cell loss ratio in the direction local -> remote. The actual CLR value is derived as the negative logarithm of this value. The range is 1..15.	6
53	cwaChanRemoteCLR	read-create	Encoded value representing the maximum tolerable cell loss ratio in the direction remote -> local. The actual CLR value is derived as the negative logarithm of this value. The range is (1..100000000). The units are in microseconds.	6

## CwAtmChanStateTable

Each entry in the cwAtmChanStateTable corresponds to a connection endpoint on the PNNI Controller.

**Table D-24 cwAtmChanStateEntry Objects**

No.	Object Type	Access	Description
1	cwAtmChanAlarmState	read-only	Defines alarms associated with an endpoint.
2	cwaChanEgressXmtState	read-only	State of the transmit portion of the endpoint in the egress direction.
3	cwaChanEgressRcvState	read-only	The state of the receive portion of the endpoint in the egress direction.
4	cwaChanIngressXmtState	read-only	The state of the transmit portion of the endpoint in the ingress direction.
5	cwaChanIngressRcvState	read-only	The state of the receive portion of the endpoint in the ingress direction

## CwAtmChanTestTable

Each entry in the cwAtmChanTextTable corresponds to a connection endpoint on the PNNI Controller.

**Table D-25 cwAtmChanTestEntry Objects**

No.	Object Type	Access	Description	Default
1	cwAtmChanTestType	read-create	<p>This object sets a particular channel in one of three loopback types:</p> <ul style="list-style-type: none"> <li>chanLpbk: a disruptive loopback performed within the PNNI Controller, which loops data from the CPE back to the CPE.</li> <li>camLpbk: a non-disruptive loopback performed using OAM loopback cells sent toward the remote endpoint and looped back at the remote endpoint.</li> <li>cpeLpbk: a non-disruptive loopback performed using OAM loopback cells that are sent toward the CPE and logged back by the CPE.</li> </ul> <p>Attempting to set a channel in loopback during a test in progress results in failure of the SET operation.</p>	notLpbk(1)
2	cwaChanTestDir	read-create	<p>Specifies the direction in which loopback should be effected:</p> <ul style="list-style-type: none"> <li>* For destructive loopback, this takes values external (1) and internal (2).</li> <li>* For non-destructive loopback, this takes values forward (3) and reverse (4).</li> <li>* When cwaChanTestType is noLpbk (1), this object is ignored.</li> </ul>	



Table D-25 cwAtmChanTestEntry Objects (continued)

No.	Object Type	Access	Description	Default
3	cwaChanTestIterations	read-create	Specifies the number of times that a test needs to be performed. This object is applicable only to camLpbk and cpeLpbk types. A GET performed on this object results in return of the number of successful iterations of the loopback test.	1
4	cwaChanTestState	read-only	Reflects the status of the last OAM loopback test performed on a connection. Where a loopback is in progress, this object displays the type of loopback in effect. Removal of chanLpbk results in SET to notInLpbk.	noStatus(1)
5	cwaChanTestRoundTripDelay	read-create	Returns the round trip delay in milliseconds, measured during the last OAM loopback test.  The value is in range 1 to 100000000. The unit of this variable is in microseconds.	

