SNA APPN Node MIB

Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

This RFC describes IBM’s SNMP support for SNA Advanced Peer-to-Peer Networking (APPN) nodes.

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1.0 Introduction

This module contains managed objects which describe the following:

- The APPN node (either an APPN network node or an APPN end node)
- The connections of the node to other SNA nodes
- The APPN network topology (as reflected in the network topology database that is replicated in each APPN network node).

This module does not describe the SNA logical units (LUs) served by the APPN node nor does it describe the sessions between LUs. Managed objects for that information are under development.
2.0 Definitions

IBM-6611-APPN-MIB DEFINITIONS ::= BEGIN

IMPORTS enterprises, Counter, IpAddress,
        Gauge, TimeTicks
        FROM RFC1155-SMI

DisplayString
        FROM RFC1213-MIB

OBJECT-TYPE
        FROM RFC-1212;

-- **************************************************************************
ibm
OBJECT IDENTIFIER ::= { enterprises 2 }

ibmProd
OBJECT IDENTIFIER ::= { ibm 6 }

ibm6611
OBJECT IDENTIFIER ::= { ibmProd 2 }

ibmappn
OBJECT IDENTIFIER ::= { ibm6611 13 }

-- ********************** The APPN Node Group **********************

ibmappnNode
OBJECT IDENTIFIER ::= { ibmappn 1 }

ibmappnGeneralInfoAndCaps
OBJECT IDENTIFIER ::= { ibmappnNode 1 }

ibmappnEnUniqueInfoAndCaps
OBJECT IDENTIFIER ::= { ibmappnNode 2 }

ibmappnPortInformation
OBJECT IDENTIFIER ::= { ibmappnNode 3 }

ibmappnLinkStationInformation
OBJECT IDENTIFIER ::= { ibmappnNode 4 }

ibmappnSnmpInformation
OBJECT IDENTIFIER ::= { ibmappnNode 5 }

ibmappnMemoryUse
OBJECT IDENTIFIER ::= { ibmappnNode 6 }

ibmappnXidInformation
OBJECT IDENTIFIER ::= { ibmappnNode 7 }

-- This group provides global information about the
-- APPN node, which is either a network node or an end node.

-- The first section applies to all APPN nodes.
-- The second section applies only to network nodes.
-- The third section applies only to end nodes.
-- The fourth section applies to Port information.
-- The fifth section applies to SNA link station Information.
-- The sixth section applies to SNMP traffic for this APPN sub-agent
-- The seventh section applies to APPN memory usage.
-- The eighth section applies to XID activities.
-- APPN General Information
-- This section applies to both network and end nodes.

ibmappnNodeCpName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned network name
for this node in the format NETID.CPNAME."
 ::= { ibmappnGeneralInfoAndCaps 1 }

ibmappnNodeNetid OBJECT-TYPE
SYNTAX DisplayString  (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned APPN network identification,
which can be from one to eight characters.
This ID is used with the control point name
to create a fully-qualified control point name."
 ::= { ibmappnGeneralInfoAndCaps 2 }

ibmappnNodeBlockNum OBJECT-TYPE
SYNTAX DisplayString   (SIZE (3))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The block number is the first three digits of the node_id. These 3 hexadecimal digits identify the product and are not configurable."
 ::= { ibmappnGeneralInfoAndCaps 3 }

ibmappnNodeIdNum OBJECT-TYPE
SYNTAX DisplayString  (SIZE (5))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The ID number is the last 5 digits of the node_id. These 5 hexadecimal digits are administratively defined and combined with the 3 digit block number form the node_id. This node_id is used to identify the local node and is include in APPN alerts as well as being included in XIDs. A unique value is required for connections to SNA
::=  { ibmappnGeneralInfoAndCaps 4 }

ibmappnNodeType  OBJECT-TYPE
SYNTAX INTEGER {
    networkNode(1),
    endNode(2),
    len(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Type of APPN node, either network, len, or end node."
::=  { ibmappnGeneralInfoAndCaps 5 }

ibmappnNodeUpTime  OBJECT-TYPE
SYNTAX TimeTicks
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Time (in hundredths of a second) since this APPN node was initialized."
::=  { ibmappnGeneralInfoAndCaps 6 }

ibmappnNodeNegotLs  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports negotiable link stations."
::=  { ibmappnGeneralInfoAndCaps 7 }

ibmappnNodeSegReasm  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports segment reassembly. This is only supported when segment generation is also supported."
::=  { ibmappnGeneralInfoAndCaps 8 }

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ibmappnNodeBindReasm OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports Bind segment reassembly. This will only be supported when Bind segment generation is also supported."
::= { ibmappnGeneralInfoAndCaps 9 }

ibmappnNodeParallelTg OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports parallel TGs."
::= { ibmappnGeneralInfoAndCaps 10 }

ibmappnNodeService OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node allows call-in from nodes not defined locally."
::= { ibmappnGeneralInfoAndCaps 11 }

ibmappnNodeAdaptiveBindPacing OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports adaptive bind pacing."
::= { ibmappnGeneralInfoAndCaps 12 }

-- ************************************************************
-- APPN Network Node Information
-- This section provides global information about the
-- APPN network node.
ibmappnNodeNnRcvRegChar OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports receiving registered characteristics."

 ::=  { ibmappnNnUniqueInfoAndCaps 1 }

ibmappnNodeNnGateway  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this is a gateway node."

 ::=  { ibmappnNnUniqueInfoAndCaps 2 }

ibmappnNodeNnCentralDirectory  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports central directory cache."

 ::=  { ibmappnNnUniqueInfoAndCaps 3 }

ibmappnNodeNnTreeCache  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports route tree cache."

 ::=  { ibmappnNnUniqueInfoAndCaps 4 }

ibmappnNodeNnTreeUpdate  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node supports incremental_tree_update, which is only supported when tree caching is supported."

 ::=  { ibmappnNnUniqueInfoAndCaps 5 }

ibmappnNodeNnRouteAddResist  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Route addition resistance is a value that indicates the relative desirability of using this node for intermediate session traffic. The value, which can be any integer 0-255, is used in route computation. The lower the value, the more desirable the node is for intermediate routing."

::=  { ibmappnNnUniqueInfoAndCaps 6 }

ibmappnNodeNnIsr OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports intermediate session routing."

::=  { ibmappnNnUniqueInfoAndCaps 7 }

ibmappnNodeNnFrsn OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This object is the last FRSN sent in a topology update to adjacent network nodes."

::=  { ibmappnNnUniqueInfoAndCaps 8 }

-- ************************************************************
-- APPN End Node Information
--

ibmappnNodeEnSegGen OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this end node supports segment generation."
::= { ibmappnEnUniqueCaps 1 }

ibmappnNodeEnModeCosMap OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION "Indicates whether this end node supports mode name to COS name mapping."

::= { ibmappnEnUniqueCaps 2 }

ibmappnNodeEnLocateCdinit OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION "Indicates whether this end node supports Locate Cdinit."

::= { ibmappnEnUniqueCaps 3 }

ibmappnNodeEnSendRegNames OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION "Indicates whether the node will register its LUs with the adjacent serving network node:

   NO - do not register names
   YES - register names"

::= { ibmappnEnUniqueCaps 4 }

ibmappnNodeEnSendRegChar OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION "Indicates whether this node supports send register characteristics, which is only supported when send registered names is also supported."

::= { ibmappnEnUniqueCaps 5 }
ibmappnNodePortTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodePortEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The Port table describes the configuration and current
status of the ports used by APPN. The type of DLC is
included in this table as a pointer to the DLC port
specific tables."
 ::= { ibmappnPortInformation 1 }

ibmappnNodePortEntry OBJECT-TYPE
SYNTAX IbmappnNodePortEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The Port Name is used as the index to this table."

INDEX
{ ibmappnNodePortName }
 ::= { ibmappnNodePortTable 1 }

IbmappnNodePortEntry ::= SEQUENCE {
 ibmappnNodePortName            DisplayString,
 ibmappnNodePortState           INTEGER,
 ibmappnNodePortDlcType         INTEGER,
 ibmappnNodePortPortType        INTEGER,
 ibmappnNodePortSIMRIM          INTEGER,
 ibmappnNodePortLsRole          INTEGER,
 ibmappnNodePortMaxRcvBtuSize   INTEGER,
 ibmappnNodePortMaxIframeWindow INTEGER,
 ibmappnNodePortDefLsGoodXids   Counter,
 ibmappnNodePortDefLsBadXids    Counter,
 ibmappnNodePortDynLsGoodXids   Counter,
 ibmappnNodePortDynLsBadXids    Counter,
 ibmappnNodePortSpecific        OBJECT IDENTIFIER
}

ibmappnNodePortName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this APPN port.
The name can be from one to eight characters."

::=  { ibmappnNodePortEntry 1 }

ibmappnNodePortState  OBJECT-TYPE
SYNTAX INTEGER {
   inactive(1),
   pendactive(2),
   active(3),
   pendinact(4)
}
ACCESS read-write
STATUS mandatory
DESCRIPTION
"Indicates the current state of this port."

::=  { ibmappnNodePortEntry 2 }

ibmappnNodePortDlcType OBJECT-TYPE
SYNTAX INTEGER {
   other(1), -- none of the following
   sdlc(2),
   dls(3),
   socket(4),
   ethernet(5),
   tokenRing(6)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The type of DLC interface, distinguished according
to the protocol immediately 'below' this layer."

::=  { ibmappnNodePortEntry 3 }

ibmappnNodePortPortType OBJECT-TYPE
SYNTAX INTEGER {
   leased(1),
   switched(2),
   sharedAccessFacilities(3)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Identifies the type of line used by this port."
::= { ibmappnNodePortEntry 4 }

ibmappnNodePortSIMRIM OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether Set Initialization Mode (SIM) and
Receive Initialization Mode (RIM) are supported."
::= { ibmappnNodePortEntry 5 }

ibmappnNodePortLsRole OBJECT-TYPE
SYNTAX INTEGER {
    primary(1),
    secondary(2),
    negotiable(3),
    abm(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Initial role for LSs activated through this port,
where 'abm' indicates asynchronous balance mode."
::= { ibmappnNodePortEntry 6 }

ibmappnNodePortMaxRcvBtuSize OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum Basic Transmission Size (BTU) that a
link station on this port can receive."
::= { ibmappnNodePortEntry 7 }

ibmappnNodePortMaxIframeWindow OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum number of I-frames that can be received
by the XID sender before an acknowledgement is received."
::= { ibmappnNodePortEntry 8 }

ibmappnNodePortDefLsGoodXids  OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The total number of successful XIDs that have occurred on all defined link stations on this port since the last time this port was started."

::= { ibmappnNodePortEntry 9 }

ibmappnNodePortDefLsBadXids  OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The total number of unsuccessful XIDs that have occurred on all defined link stations on this port since the last time this port was started."

::= { ibmappnNodePortEntry 10 }

ibmappnNodePortDynLsGoodXids  OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The total number of successful XIDs that have occurred on all dynamic link stations on this port since the last time this port was started."

::= { ibmappnNodePortEntry 11 }

ibmappnNodePortDynLsBadXids  OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The total number of unsuccessful XIDs that have occurred on all dynamic link stations on this port since the last time this port was started."

::= { ibmappnNodePortEntry 12 }

ibmappnNodePortSpecific OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER

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ACCESS read-only
STATUS mandatory
DESCRIPTION
"Identifies the port specific OBJECT IDENTIFIER
that can provide additional information."
::= { ibmappnNodePortEntry 13 }

-- ************************************************************
--
--
ibmappnNodePortIpTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodePortIpEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Port table (TCP/IP specific)."
::= { ibmappnPortInformation 2 }

ibmappnNodePortIpEntry OBJECT-TYPE
SYNTAX IbmappnNodePortIpEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The IP Name is used as the index to this table."
INDEX
{ibmappnNodePortIpName}
::= { ibmappnNodePortIpTable 1 }

IbmappnNodePortIpEntry ::= SEQUENCE {
  ibmappnNodePortIpName          DisplayString,
  ibmappnNodePortIpPortNum       INTEGER
}

ibmappnNodePortIpName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this APPN port.
The name can be from one to eight characters."
::=  { ibmappnNodePortIpEntry 1 }

ibmappnNodePortIpPortNum OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Local TCP/IP port number."
::=  { ibmappnNodePortIpEntry 2 }

-- ******************************************************
--
--
ibmappnNodePortDlsTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodePortDlsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  "Port table (DLS specific)."
::=  { ibmappnPortInformation 3 }

ibmappnNodePortDlsEntry OBJECT-TYPE
SYNTAX IbmappnNodePortDlsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  "The DLS Name is used as the index to this table."
INDEX
  {ibmappnNodePortDlsName }
::=  { ibmappnNodePortDlsTable 1 }

IbmappnNodePortDlsEntry ::= SEQUENCE {
  ibmappnNodePortDlsName           DisplayString,
  ibmappnNodePortDlsMac            OCTET STRING,
  ibmappnNodePortDlsSap            OCTET STRING
}

ibmappnNodePortDlsName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION

"Administratively-assigned name for this APPN DLS port.
The name can be from one to eight characters."

::=  { ibmappnNodePortDlsEntry 1 }  

ibmappnNodePortDlsMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local DLS MAC address."

::=  { ibmappnNodePortDlsEntry 2 }  

ibmappnNodePortDlsSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local DLS Sap address."

::=  { ibmappnNodePortDlsEntry 3 }  

-- ************************************************************
--
--

ibmappnNodePortTrTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodePortTrEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Port table (Token Ring specific)."

::=  { ibmappnPortInformation 4 }  

ibmappnNodePortTrEntry OBJECT-TYPE
SYNTAX IbmappnNodePortTrEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The TR Name is used as the index to this table."

INDEX
{ ibmappnNodePortTrName }
::= { ibmappnNodePortTrTable 1 }

IbmappnNodePortTrEntry ::= SEQUENCE {
  ibmappnNodePortTrName DisplayString,
  ibmappnNodePortTrMac OCTET STRING,
  ibmappnNodePortTrSap OCTET STRING
}

ibmappnNodePortTrName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this APPN port. The name can be from one to eight characters."

::= { ibmappnNodePortTrEntry 1 }

ibmappnNodePortTrMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local Token Ring MAC address."

::= { ibmappnNodePortTrEntry 2 }

ibmappnNodePortTrSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local Token Ring Sap address."

::= { ibmappnNodePortTrEntry 3 }

-- ******************************************************
-- APPN generic DLC Trace
--

ibmappnNodePortDlcTraceTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodePortDlcTraceEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Port table generic DLC trace table."
ibmappnNodePortDlcTraceEntry OBJECT-TYPE
SYNTAX   IbmappnNodePortDlcTraceEntry
ACCESS not-accessible
STATUS   mandatory
DESCRIPTION
"The Port name and a dynamic integer are the index to
this table."

INDEX
{ibmappnNodePortDlcTracPortName, ibmappnNodePortDlcTracIndex}

::= { ibmappnNodePortDlcTraceTable 1 }

IbmappnNodePortDlcTraceEntry ::= SEQUENCE {
        ibmappnNodePortDlcTracPortName     DisplayString,
        ibmappnNodePortDlcTracIndex        INTEGER,
        ibmappnNodePortDlcTracDlcType      INTEGER,
        ibmappnNodePortDlcTracLocalAddr    DisplayString,
        ibmappnNodePortDlcTracRemoteAddr   DisplayString,
        ibmappnNodePortDlcTracMsgType      INTEGER,
        ibmappnNodePortDlcTracCmdType      INTEGER,
        ibmappnNodePortDlcTracUseWan       INTEGER
}

ibmappnNodePortDlcTracPortName OBJECT-TYPE
SYNTAX   DisplayString
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
"The Port name associated with this this trace table entry."

::= { ibmappnNodePortDlcTraceEntry 1 }

ibmappnNodePortDlcTracIndex OBJECT-TYPE
SYNTAX   INTEGER
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
"This index value is updated every time a new trace entry
is created which provides a means to retrieve only the
updated entries and also provides a simple method of
correlating the entries. The table will wrap when the
table is full, which will result in previous entries
being written over. The management station can over
come this by retrieving the table using this index to
retrieve only the new table entries."

::= { ibmappnNodePortDlcTraceEntry 2 }

ibmappnNodePortDlcTracDlcType OBJECT-TYPE
SYNTAX INTEGER {
  other(1), -- none of the following
  sdlc(2),
  dlsw(3),
  socket(4),
  ethernet(5),
  tokenRing(6)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The type of DLC interface, distinguished according to the protocol immediately 'below' this layer."

::= { ibmappnNodePortDlcTraceEntry 3 }

ibmappnNodePortDlcTracLocalAddr OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local address in format described below:

other = free form DisplayString
ip    = ld. ld. ld. ld / 2d
tr    = lx: lx: lx: lx: lx: lx . lx

"

::= { ibmappnNodePortDlcTraceEntry 4 }

ibmappnNodePortDlcTracRemoteAddr OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Remote Address in the format described below:

other = free form DisplayString
ip    = ld. ld. ld. ld / 2d
tr    = lx: lx: lx: lx: lx: lx . lx

"

::= { ibmappnNodePortDlcTraceEntry 5 }

ibmappnNodePortDlcTracMsgType OBJECT-TYPE
SYNTAX INTEGER {
  -- enumeration values between 1 and 1999 are reserved
  -- for potential undefined message types.
  other(1),
  unknown(2),
  request(3),
  confirm(4),
  indication(5),
  response(6)

  -- enumeration values between 2000 and 3999 are reserved
  -- for IP socket traces,

  -- enumeration values between 4000 and 5999 are reserved
  -- for DLS traces,

  -- enumeration values between 6000 and 7999 are reserved
  -- for TR traces,
}
ACCESS read-only
STATUS mandatory
DESCRIPTION "Indicates the type of trace record entry"
::= { ibmappnNodePortDlcTraceEntry 6 }

ibmappnNodePortDlcTracCmdType OBJECT-TYPE
SYNTAX INTEGER {
  testFrame(1),
  respFrame(2),
  curFrame(3),
  icrFrame(4),
  McKenzie & Cheng

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respAck(5),
dgrmFrame(6),
径idFrame(7),
contFrame(8),
contedFrame(9),
iFrame(10),
enterBusy(12),
exitBusy(13),
haltFrame(14),
lsHalted(15),
restartLs(16),
lsRestarted(17),
netBioSnq(18),
netBioSnr(19),
gnetFrame(20),
netdFrame(21),
oobFrame(22),
alterSap(23),
testRsp(24),
haltLsNow(25),
testReq(26),

-- enumeration values between 2000 and 3999 are reserved
for IP socket traces.
ipTestFrame(2001),
ipRespFrame(2002),
ipCurFrame(2003),
ipIcrFrame(2004),
ipRespAck(2005),
ipDgrmFrame(2006),
ipXidFrame(2007),
ipContFrame(2008),
ipContedFrame(2009),
ipIframe(2010),
ipEnterBusy(2012),
ipExitBusy(2013),
ipHaltFrame(2014),
ipLsHalted(2015),
ipRestartLs(2016),
ipLsRestarted(2017),
ipNetBioSnq(2018),
ipNetBioSnr(2019),
ipGnetFrame(2020),
ipNetdFrame(2021),
ipOobFrame(2022),
ipAlterSap(2023),
ipTestRsp(2024),
ipHaltLsNow(2025),
ipTestReq(2026),
-- enumeration values between 4000 and 5999 are reserved for DLS traces.
  dlsIpm(4124),
-- enumeration values between 6000 and 7999 are reserved for TR traces.
  trTestFrame(6001),
  trRespFrame(6002),
  trCurFrame(6003),
  trIcrFrame(6004),
  trRespAck(6005),
  trDgrmFrame(6006),
  trXidFrame(6007),
  trContFrame(6008),
  trContedFrame(6009),
  trFrame(6010),
  trEnterBusy(6012),
  trExitBusy(6013),
  trHaltFrame(6014),
  trLsHalted(6015),
  trRestartLs(6016),
  trLsRestarted(6017),
  trNetBioSnq(6018),
  trNetBioSnr(6019),
  trGnetFrame(6020),
  trNetdFrame(6021),
  trOobFrame(6022),
  trAlterSap(6023),
  trTestRsp(6024),
  trHaltLsNow(6025),
  trTestReq(6026)

ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Indicates the command type of the trace entry."

::= { ibmappnNodePortDlcTraceEntry 7 }

ibmappnNodePortDlcTracUseWan OBJECT-TYPE
SYNTAX INTEGER
  { other(1),
    notApplicable(2),
    useUnknown(3),

useWan(4),
useLan(5)
}

ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates the type of connection of the trace entry. For example, token ring and ethernet ports will have useLan as connection. For the dls port, it could be either useWan if connection is across Wan via dls sessions, or useLan if connection is to a local attached LAN."

::= { ibmappnNodePortDlcTraceEntry 8 }

-- ************************************************************
-- APPN Link Station Information
--

ibmappnNodeLsTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodeLsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table contains detail information about the link station configuration and current status."

::= { ibmappnLinkStationInformation 1 }

ibmappnNodeLsEntry OBJECT-TYPE
SYNTAX IbmappnNodeLsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the link station name."

INDEX
{ ibmappnNodeLsName }

::= { ibmappnNodeLsTable 1 }

IbmappnNodeLsEntry ::= SEQUENCE {
 ibmappnNodeLsName DisplayString,
 ibmappnNodeLsPortName DisplayString,
 ibmappnNodeLsDlcType INTEGER,
}
ibmappnNodeLsDynamic INTEGER,
ibmappnNodeLsState INTEGER,

-- ls defined data / xid info
ibmappnNodeLsCpName DisplayString,
ibmappnNodeLsTgNum INTEGER,
ibmappnNodeLsLimResource INTEGER,
ibmappnNodeLsMigration INTEGER,
ibmappnNodeLsBlockNum DisplayString,
ibmappnNodeLsIdNum DisplayString,
ibmappnNodeLsCpCpSession INTEGER,

-- ls parms (common) / xid info
ibmappnNodeLsTargetPacingCount INTEGER,
ibmappnNodeLsMaxSendBtuSize INTEGER,

-- tg characteristics
ibmappnNodeLsEffCap INTEGER,
ibmappnNodeLsConnCost INTEGER,
ibmappnNodeLsByteCost INTEGER,
ibmappnNodeLsSecurity INTEGER,
ibmappnNodeLsDelay INTEGER,
ibmappnNodeLsUsr1 INTEGER,
ibmappnNodeLsUsr2 INTEGER,
ibmappnNodeLsUsr3 INTEGER,

-- ls (performance data)
ibmappnNodeLsInXidBytes Counter,
ibmappnNodeLsInMsgBytes Counter,
ibmappnNodeLsInXidFrames Counter,
ibmappnNodeLsInMsgFrames Counter,
ibmappnNodeLsOutXidBytes Counter,
ibmappnNodeLsOutMsgBytes Counter,
ibmappnNodeLsOutXidFrames Counter,
ibmappnNodeLsOutMsgFrames Counter,

-- ls (propagation delay)
ibmappnNodeLsEchoRsps Counter,
ibmappnNodeLsCurrentDelay INTEGER,
ibmappnNodeLsMaxDelay INTEGER,
ibmappnNodeLsMinDelay INTEGER,
ibmappnNodeLsMaxDelayTime TimeTicks,

-- ls (Xid Statistics)
ibmappnNodeLsGoodXids Counter,
ibmappnNodeLsBadXids Counter,

-- Dlc specific
ibmappnNodeLsSpecific OBJECT IDENTIFIER,
ibmappnNodeLsSubState INTEGER,
ibmappnNodeLsStartTime TimeTicks,
ibmappnNodeLsActiveTime TimeTicks,
ibmappnNodeLsCurrentStateTime TimeTicks

}
ibmappnNodeLsName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for the link station. The name can be from one to eight characters."
 ::= { ibmappnNodeLsEntry 1 }

ibmappnNodeLsPortName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for the port. The name can be from one to eight characters."
 ::= { ibmappnNodeLsEntry 2 }

ibmappnNodeLsDlcType OBJECT-TYPE
SYNTAX INTEGER {
    other(1),        -- none of the following
    sdlc(2),
    dls(3),
    socket(4),
    ethernet(5),
    tokenRing(6)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The type of DLC interface, distinguished according to the protocol immediately 'below' this layer."
 ::= { ibmappnNodeLsEntry 3 }

ibmappnNodeLsDynamic OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Identifies whether this resource is a dynamic link station. Dynamic link stations are created when adjacent nodes that have not been locally defined establish a connection with this node."
::=  { ibmappnNodeLsEntry 4 }

ibmappnNodeLsState  OBJECT-TYPE
SYNTAX INTEGER
{ inactive(1),
  pendactive(2),
  active(3),
  pendinact(4) }
ACCESS read-write
STATUS mandatory
DESCRIPTION
"State of this link station."
::=  { ibmappnNodeLsEntry 5 }

ibmappnNodeLsCpName  OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Fully-qualified name of the adjacent node for this link
station. The name can be from three to seventeen
characters. Format is netid.cpname."
::=  { ibmappnNodeLsEntry 6 }

ibmappnNodeLsTgNum  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number associated with the TG to this link station."
::=  { ibmappnNodeLsEntry 7 }

ibmappnNodeLsLimResource  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the link station is
a limited resource. If it is, the TG
is deactivated when there are no sessions."
::=  { ibmappnNodeLsEntry 8 }
ibmappnNodeLsMigration  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this link station will be used for connections to down-level or migration partners."
::=  { ibmappnNodeLsEntry 9 }

ibmappnNodeLsBlockNum OBJECT-TYPE
SYNTAX DisplayString   (SIZE (3))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The block number is the first three digits of the node_id. These 3 hexidecimal digits identify the product and are not configurable."
::=  { ibmappnNodeLsEntry 10 }

ibmappnNodeLsIdNum OBJECT-TYPE
SYNTAX DisplayString  (SIZE (5))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The ID number is the last 5 digits of the node_id. These 5 hexadecimal digits are administratively defined and combined with the 3 digit block number form the node_id. This node_id is used to identify the local node and is include in APPN alerts as well as being included in XIDs. A unique value is required for connections to SNA sub-area."
::=  { ibmappnNodeLsEntry 11 }

ibmappnNodeLsCpCpSession  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether CP-CP sessions are supported by this link station."
::=  { ibmappnNodeLsEntry 12 }

ibmappnNodeLsTargetPacingCount  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Numeric value between 0 and 32767 inclusive indicating
the desired pacing window size for BINDs on this TG.
The number is significant only when fixed bind pacing
is being performed."

::=  { ibmappnNodeLsEntry 13 }

ibmappnNodeLsMaxSendBtuSize  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Numeric value between 0 and 32767 inclusive indicating
the desired number of bytes in a Basic Transmission Unit
(BTU) that can be sent on this TG.
This is an administratively assigned value."

::=  { ibmappnNodeLsEntry 14 }

ibmappnNodeLsEffCap   OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The effective capacity is an integer value that indicates
the kilo bits per second.
It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776.
This is an administratively assigned value associated
with the TG using this link station."

::=  { ibmappnNodeLsEntry 15 }

ibmappnNodeLsConnCost OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Cost per connect time: a value representing
the relative cost per unit of time to use
the TG. Range is from 0, which means no cost,
to 255, which indicates maximum cost.
This is an administratively assigned value associated
with the TG using this link station."
::=  { ibmappnNodeLsEntry 16 }

ibmappnNodeLsByteCost  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative cost of transmitting a byte over this link.
Range is from 0 (lowest cost) to 255.
This is an administratively assigned value associated
with the TG using this link station."

::=  { ibmappnNodeLsEntry 17 }

ibmappnNodeLsSecurity  OBJECT-TYPE
SYNTAX INTEGER {
  nonsecure(1), --X'01'
  publicSwitchedNetwork(32), --X'20'
  undergroundCable(64), --X'40'
  secureConduit(96), --X'60'
  guardedConduit(128), --X'80'
  encrypted(160), --X'A0'
  guardedRadiation(192) --X'C0'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The security is represented as an integer with a range of
1 thru 255 with the most common values enumerated as
defined above.
This is an administratively assigned value associated
with the TG using this link station."

::=  { ibmappnNodeLsEntry 18 }

ibmappnNodeLsDelay  OBJECT-TYPE
SYNTAX INTEGER {
  minimum(0), --X'00'
  negligible(384), --X'4C'
  terrestrial(9216), --X'71'
  packet(147456), --X'91'
  long(294912), --X'99'
  maximum(2013265920) --X'FF'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative amount of time that it takes for a signal to
travel the length of the logical link. This time is represented in micro seconds, with some of the more common values enumerated. This is an administratively assigned value associated with the TG using this link station."

::=  { ibmappnNodeLsEntry 19 }

ibmappnNodeLsUsr1 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"First user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with the TG using this link station."

::=  { ibmappnNodeLsEntry 20 }

ibmappnNodeLsUsr2 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Second user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with the TG using this link station."

::=  { ibmappnNodeLsEntry 21 }

ibmappnNodeLsUsr3 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Third user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with the TG using this link station."

::=  { ibmappnNodeLsEntry 22 }

ibmappnNodeLsInXidBytes OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of XID bytes received."

::= { ibmappnNodeLsEntry 23 }

ibmappnNodeLsInMsgBytes OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of message (I-frame) bytes received."

::= { ibmappnNodeLsEntry 24 }

ibmappnNodeLsInXidFrames OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of XID frames received."

::= { ibmappnNodeLsEntry 25 }

ibmappnNodeLsInMsgFrames OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of message (I-frame) frames received."

::= { ibmappnNodeLsEntry 26 }

ibmappnNodeLsOutXidBytes OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of XID bytes sent."

::= { ibmappnNodeLsEntry 27 }

ibmappnNodeLsOutMsgBytes OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of message (I-frame) bytes sent."
::=  { ibmappnNodeLsEntry 28 }

ibmappnNodeLsOutXidFrames OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of XID frames sent."

::=  { ibmappnNodeLsEntry 29 }

ibmappnNodeLsOutMsgFrames OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of message (I-frame) frames sent."

::=  { ibmappnNodeLsEntry 30 }

ibmappnNodeLsEchoRsps OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of responses returned from adjacent link station. A response should be returned for each test frame sent by this node. Test frames are sent to adjacent nodes periodically to verify connectivity and to measure that actual round trip time, that is the time the test frame is sent until the response is received."

::=  { ibmappnNodeLsEntry 31 }

ibmappnNodeLsCurrentDelay OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The time that it took for the last test signal to be sent and returned from this link station to the adjacent links station. This time is represented in milliseconds."

::=  { ibmappnNodeLsEntry 32 }

ibmappnNodeLsMaxDelay OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The longest time it took for a test signal
to be sent and returned from this link station to the
adjacent links station.
This time is represented in milliseconds."
 ::=  { ibmappnNodeLsEntry 33 }

ibmappnNodeLsMinDelay OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The shortest time it took for a test signal
to be sent and returned from this link station to the
adjacent links station.
This time is represented in milliseconds."
 ::=  { ibmappnNodeLsEntry 34 }

ibmappnNodeLsMaxDelayTime OBJECT-TYPE
SYNTAX TimeTicks
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The time (since system up in hundredth of seconds)
when the longest delay occurred.
This time can be used to identify when this high
water mark occurred in relation to the last initialization
of the APPN node."
 ::=  { ibmappnNodeLsEntry 35 }

ibmappnNodeLsGoodXids OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The total number of successful XIDs that have occurred
on this link station since the time it was started."
 ::=  { ibmappnNodeLsEntry 36 }

ibmappnNodeLsBadXids OBJECT-TYPE
SYNTAX Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The total number of unsuccessful XIDs that have occurred on this link station since the time it was started."

::=  { ibmappnNodeLsEntry 37 }

ibmappnNodeLsSpecific  OBJECT-TYPE
SYNTAX  OBJECT IDENTIFIER
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"Identifies the DLC specific OBJECT IDENTIFIER that can provide additional information."

::=  { ibmappnNodeLsEntry 38 }

ibmappnNodeLsSubState  OBJECT-TYPE
SYNTAX  INTEGER
{
inactive(1),
sentReqOpnstmt(2),
pendXidExch(3),
sentActAs(4),
sentSetMode(5),
active(6),
sentDeactAsOrd(7),
sentDiscOrd(8),
sentDestroyTg(9),
sentCreateTg(10),
sentConnReq(11),
pendRcvConnInd(12),
pendSendConnRsp(13),
sentConnRsp(14),
pendDeact(15)
}

ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"State of this link station."

::=  { ibmappnNodeLsEntry 39 }

ibmappnNodeLsStartTime  OBJECT-TYPE
SYNTAX  TimeTicks
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"The time (in hundredth of seconds) this link station has been active the last time since the time APPN was initialized."

::= { ibmappnNodeLsEntry 40 }

ibmappnNodeLsActiveTime OBJECT-TYPE
SYNTAX TimeTicks
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The time (in hundredth of seconds) this link station has been in the active state. A zero value indicates the link station has never been active."

::= { ibmappnNodeLsEntry 41 }

ibmappnNodeLsCurrentStateTime OBJECT-TYPE
SYNTAX TimeTicks
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The time (in hundredth of seconds) the link station is in the current state."

::= { ibmappnNodeLsEntry 42 }

-- ****************************
-- Link station table (TCP/IP specific)
--

ibmappnNodeLsIpTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodeLsIpEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Link station table (TCP/IP specific)."

::= { ibmappnLinkStationInformation 2 }

ibmappnNodeLsIpEntry OBJECT-TYPE
SYNTAX IbmappnNodeLsIpEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The IP Name is used as the index to this table."
INDEX
  {ibmappnNodeLsIpName }
::= { ibmappnNodeLsIpTable 1 }

IbmappnNodeLsIpEntry ::= SEQUENCE {
  ibmappnNodeLsIpName             DisplayString,
  ibmappnNodeLsIpState            INTEGER,
  ibmappnNodeLsLocalIpAddr        IpAddress,
  ibmappnNodeLsLocalIpPortNum     INTEGER,
  ibmappnNodeLsRemoteIpAddr       IpAddress,
  ibmappnNodeLsRemoteIpPortNum    INTEGER
}

ibmappnNodeLsIpName OBJECT-TYPE
  SYNTAX DisplayString (SIZE (1..8))
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
  "Administratively-assigned name for this link station. The
   name can be from one to eight characters."
::=  { ibmappnNodeLsIpEntry 1 }

ibmappnNodeLsIpState        OBJECT-TYPE
  SYNTAX INTEGER    {
    inactive(1),
    pendactive(2),
    active(3),
    pendiact(4)
  }
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
  "State of this link station."
::=  { ibmappnNodeLsIpEntry 2 }

ibmappnNodeLsLocalIpAddr OBJECT-TYPE
  SYNTAX IpAddress
  ACCESS read-only
  STATUS mandatory
  DESCRIPTION
  "Local IP address."
::=  { ibmappnNodeLsIpEntry 3 }

ibmappnNodeLsLocalIpPortNum OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "Local TCP/IP port number.
   The default listening port will be administratively
   assigned and will dynamically change if this node
   initiates a session with adjacent node."
 ::=  { ibmappnNodeLsIpEntry 4 }

ibmappnNodeLsRemoteIpAddr OBJECT-TYPE
SYNTAX IpAddress
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "Remote IP address."
 ::=  { ibmappnNodeLsIpEntry 5 }

ibmappnNodeLsRemoteIpPortNum OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "Remote TCP/IP port number."
 ::=  { ibmappnNodeLsIpEntry 6 }

-- ************************************************************
-- Ls Table (DLS specific)
--

ibmappnNodeLsDlsTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodeLsDlsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
   "Ls Table (DLS specific)."
 ::= { ibmappnLinkStationInformation 3 }

ibmappnNodeLsDlsEntry OBJECT-TYPE
SYNTAX IbmappnNodeLsDlsEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The DLS Name is used as the index to this table."

INDEX
{ibmappnNodeLsDlsName }
::= { ibmappnNodeLsDlsTable 1 }

IbmappnNodeLsDlsEntry ::= SEQUENCE {
  ibmappnNodeLsDlsName            DisplayString,
  ibmappnNodeLsDlsState           INTEGER,
  ibmappnNodeLsLocalDlsMac        OCTET STRING,
  ibmappnNodeLsLocalDlsSap        OCTET STRING,
  ibmappnNodeLsRemoteDlsMac       OCTET STRING,
  ibmappnNodeLsRemoteDlsSap       OCTET STRING
}

ibmappnNodeLsDlsName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this link station.
The name can be from one to eight characters."
::= { ibmappnNodeLsDlsEntry 1 }

ibmappnNodeLsDlsState OBJECT-TYPE
SYNTAX INTEGER
\{ inactive(1),
  pendactive(2),
  active(3),
  pendinact(4)\}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"State of this link station."
::= { ibmappnNodeLsDlsEntry 2 }

ibmappnNodeLsLocalDlsMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION

McKenzie & Cheng [Page 38]
"Local MAC address."
::= { ibmappnNodeLsDlsEntry 3 }

ibmappnNodeLsLocalDlsSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local SAP address."
::= { ibmappnNodeLsDlsEntry 4 }

ibmappnNodeLsRemoteDlsMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Remote MAC address."
::= { ibmappnNodeLsDlsEntry 5 }

ibmappnNodeLsRemoteDlsSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Remote SAP address."
::= { ibmappnNodeLsDlsEntry 6 }

-- ************************************************************
-- Ls Table (Token Ring specific)
--

ibmappnNodeLsTrTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodeLsTrEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Ls Table (Token Ring specific)."
::= { ibmappnLinkStationInformation 4 }

ibmappnNodeLsTrEntry OBJECT-TYPE
SYNTAX IbmappnNodeLsTrEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The TR Name is used as the index to this table."
INDEX
{ibmappnNodeLsTrName }
::= { ibmappnNodeLsTrTable 1 }

IbmappnNodeLsTrEntry ::= SEQUENCE {
    ibmappnNodeLsTrName            DisplayString,
    ibmappnNodeLsTrState           INTEGER,
    ibmappnNodeLsLocalTrMac        OCTET STRING,
    ibmappnNodeLsLocalTrSap        OCTET STRING,
    ibmappnNodeLsRemoteTrMac       OCTET STRING,
    ibmappnNodeLsRemoteTrSap       OCTET STRING
}

ibmappnNodeLsTrName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this link station. The name can be from one to eight characters."
::= { ibmappnNodeLsTrEntry 1 }

ibmappnNodeLsTrState OBJECT-TYPE
SYNTAX INTEGER
{ inactive(1),
    pendactive(2),
    active(3),
    pendinact(4) }
ACCESS read-only
STATUS mandatory
DESCRIPTION
"State of this link station."
::= { ibmappnNodeLsTrEntry 2 }

ibmappnNodeLsLocalTrMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local MAC address."
::= { ibmappnNodeLsTrEntry 3 }

ibmappnNodeLsLocalTrSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Local SAP address."
::= { ibmappnNodeLsTrEntry 4 }

ibmappnNodeLsRemoteTrMac OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (6))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Remote MAC address."
::= { ibmappnNodeLsTrEntry 5 }

ibmappnNodeLsRemoteTrSap OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (1))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Remote SAP address."
::= { ibmappnNodeLsTrEntry 6 }

-- ****************************************************************************************************
-- This table provides information about errors this node encountered -- with connections to adjacent nodes. This includes all exceptional -- conditions encountered establishing connections and all exceptional -- conditions that result in terminating the connection. -- ****************************************************************************************************

ibmappnNodeLsStatusTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNodeLsStatusEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table contains information related to exceptional and potential exceptional conditions that occur during the activation, XID exchange, and termination of the connection."
::= { ibmappnLinkStationInformation 5 }

McKenzie & Cheng [Page 41]
ibmappnNodeLsStatusEntry OBJECT-TYPE
SYNTAX IbmappnNodeLsStatusEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the LsStatusIndex, which is an
integer that is continuously updated until it eventually
wraps. This provides the management station the ability
to retrieve only the updates to the table by using the
standard GET NEXT."
INDEX
{ ibmappnNodeLsStatusIndex }
::= { ibmappnNodeLsStatusTable 1 }

IbmappnNodeLsStatusEntry ::= SEQUENCE {
  ibmappnNodeLsStatusIndex              INTEGER,
  ibmappnNodeLsStatusTime               TimeTicks,
  ibmappnNodeLsStatusLsName             DisplayString,
  ibmappnNodeLsStatusCpName             DisplayString,
  ibmappnNodeLsStatusNodeId             OCTET STRING,
  ibmappnNodeLsStatusTgNum              INTEGER,
  ibmappnNodeLsStatusGeneralSense       OCTET STRING,
  ibmappnNodeLsStatusNofRetry           INTEGER,
  ibmappnNodeLsStatusEndSense           OCTET STRING,
  ibmappnNodeLsStatusXidLocalSense      OCTET STRING,
  ibmappnNodeLsStatusXidRemoteSense     OCTET STRING,
  ibmappnNodeLsStatusXidByteInError     INTEGER,
  ibmappnNodeLsStatusXidBitInError      INTEGER,
  ibmappnNodeLsStatusDlcType            INTEGER,
  ibmappnNodeLsStatusLocalAddr          DisplayString,
  ibmappnNodeLsStatusRemoteAddr         DisplayString
}

ibmappnNodeLsStatusIndex OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This index is continuous index this table."
::= { ibmappnNodeLsStatusEntry 1 }

ibmappnNodeLsStatusTime OBJECT-TYPE
SYNTAX TimeTicks
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Time (in hundreds of a second) since this node was last initialized."

::= { ibmappnNodeLsStatusEntry 2 }

ibmappnNodeLsStatusLsName  OBJECT-TYPE
SYNTAX  DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this link station."

::= { ibmappnNodeLsStatusEntry 3 }

ibmappnNodeLsStatusCpName    OBJECT-TYPE
SYNTAX  DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned fully-qualified name of the adjacent node partner. This will be provided when the adjacent node has been defined at this node or when the XID sequence has proceeded far enough to to identify the adjacent node. A blank CP name will indicate the name is unknown."

::= { ibmappnNodeLsStatusEntry 4 }

ibmappnNodeLsStatusNodeId       OBJECT-TYPE
SYNTAX  OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Adjacent Node id"

::= { ibmappnNodeLsStatusEntry 5 }

ibmappnNodeLsStatusTgNum   OBJECT-TYPE
SYNTAX  INTEGER (0..256)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number associated with the TG to this link station with a range from 0 to 256. A value of 256 indicates
the tg number has not been negotiated and is unknown at this time."

::=  { ibmappnNodeLsStatusEntry 6 }

ibmappnNodeLsStatusGeneralSense OBJECT-TYPE
SYNTAX OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The error sense code associated with the start sequence of activation of a link up to the beginning of the XID sequence."

 ::=  { ibmappnNodeLsStatusEntry 7 }

ibmappnNodeLsStatusNofRetry OBJECT-TYPE
SYNTAX INTEGER    {
    retry(1),
    noretry(2)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether Node Operator Facility will retry the start request to activate the link."

 ::=  { ibmappnNodeLsStatusEntry 8 }

ibmappnNodeLsStatusEndSense OBJECT-TYPE
SYNTAX OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The sense code associated with the termination of the link connection to adjacent node. This includes all sense information included in the disconnect received from the lower layer DLCs and also sense information indicating the link termination originated by upper layer APPN components."

 ::=  { ibmappnNodeLsStatusEntry 9 }

ibmappnNodeLsStatusXidLocalSense OBJECT-TYPE
SYNTAX OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The error sense code associated with the rejection of the
XID."

::=  { ibmappnNodeLsStatusEntry 10 }

ibmappnNodeLsStatusXidRemoteSense  OBJECT-TYPE
SYNTAX  OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The error sense code adjacent node returned to this node
indicating the reason the XID was rejected."

::=  { ibmappnNodeLsStatusEntry 11 }

ibmappnNodeLsStatusXidByteInError  OBJECT-TYPE
SYNTAX  INTEGER
   { na(1000) }
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This identifies the actual byte in the XID that caused the
error. The value of zero (0) indicates that the variable
has no meaning."

::=  { ibmappnNodeLsStatusEntry 12 }

ibmappnNodeLsStatusXidBitInError  OBJECT-TYPE
SYNTAX  INTEGER
   { na(8)  -- not applicable }
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This identifies the actual bit within the error byte of the
XID. This only has meaning when the byte in error is
greater than zero."

::=  { ibmappnNodeLsStatusEntry 13 }

ibmappnNodeLsStatusDlcType  OBJECT-TYPE
SYNTAX  INTEGER
   { other(1),
     sdlc(2),
     dls(3),
     socket(4),
     ethernet(5),
     tr(6) }
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This identifies DLC type that was being used when error occurred. This also is used to the format of the local and remote address provided.

other    = free form DisplayString
ip       = ld. ld. ld. ld / 2d
tr       = lx: lx: lx: lx: lx: lx . lx
"

::=  { ibmappnNodeLsStatusEntry 14 }

ibmappnNodeLsStatusLocalAddr  OBJECT-TYPE
SYNTAX  DisplayString
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"This contains a displayable string that identifies the DLC type and appropriate address. See DlcType above for details of the format."

::=  { ibmappnNodeLsStatusEntry 15 }

ibmappnNodeLsStatusRemoteAddr  OBJECT-TYPE
SYNTAX  DisplayString
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
"This contains a displayable string that identifies the DLC type and appropriate address. See DlcType above for details of the format."

::=  { ibmappnNodeLsStatusEntry 16 }

-- ************************************************************
-- APPN SNMP Performance Information

McKenzie & Cheng
ibmappnSnmpInPkts OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of messages delivered to the APPN SNMP sub-agent."
 ::= { ibmappnSnmpInformation 1 }

ibmappnSnmpInGetRequests OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of GET requests delivered to the APPN SNMP sub-agent."
 ::= { ibmappnSnmpInformation 2 }

ibmappnSnmpInGetNexts OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of GETNEXT requests delivered to the APPN SNMP sub-agent."
 ::= { ibmappnSnmpInformation 3 }

ibmappnSnmpInSetRequests OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of SET requests delivered to the APPN SNMP sub-agent."
 ::= { ibmappnSnmpInformation 4 }

ibmappnSnmpInTotalVars OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of VARIABLES included in both GET and GETNEXT requests to the APPN SNMP sub-agent."
::=  { ibmappnSnmpInformation 5 }

ibmappnSnmpInGetVars OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of VARIABLES included in all
GET requests to the APPN SNMP sub-agent."

::=  { ibmappnSnmpInformation 6 }

ibmappnSnmpInGetNextVars OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of VARIABLES included in all
GETNEXT requests to the APPN SNMP sub-agent."

::=  { ibmappnSnmpInformation 7 }

ibmappnSnmpInSetVars OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of VARIABLES included in all
SET requests to the APPN SNMP sub-agent."

::=  { ibmappnSnmpInformation 8 }

ibmappnSnmpOutNoSuchNames OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of VARIABLES that could not
be found by the APPN SNMP sub-agent."

::=  { ibmappnSnmpInformation 9 }

ibmappnSnmpOutGenErrs OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of undefined errors that
occurred processing SNMP request to the
APPN SNMP sub-agent."

::=  { ibmappnSnmpInformation 10 }

-- **************************************************
-- This group provides global information about the
-- APPN node performance.
-- The first section applies to the APPN control point
-- storage utilization.

ibmappnMemorySize OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Size of the shared storage segment, as obtained
by storage management from the underlying operating
system."

::=  { ibmappnMemoryUse 1 }

ibmappnMemoryUsed OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of bytes in the segment that are currently
allocated to process."

::=  { ibmappnMemoryUse 2 }

ibmappnMemoryWarnThresh OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Allocation threshold beyond which storage
management considers the storage resources
to be constrained."

::=  { ibmappnMemoryUse 3 }

ibmappnMemoryCritThresh OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Allocation threshold beyond which storage
management considers the storage resources
to be critically constrained."

::= { ibmappnMemoryUse 4 }

-- *******************************************************************
-- The following are Counters maintained by the APPN CS component that
-- relate to total overall XID activity.
-- *******************************************************************

ibmappnNodeDefLsGoodXids OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The current number of successful XIDs that have occurred
on all defined link stations since the last time this
node was initialized."

::= { ibmappnXidInformation 1 }

ibmappnNodeDefLsBadXids OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The current number of unsuccessful XIDs that have
occurred on all defined link stations since the last
time this node was initialized."

::= { ibmappnXidInformation 2 }

ibmappnNodeDynLsGoodXids OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The current number of successful XIDs that have
occurred on all dynamic link stations since the last
time this node was initialized."

::= { ibmappnXidInformation 3 }
ibmappnNodeDynLsBadXids OBJECT-TYPE
SYNTAX     Counter
ACCESS     read-only
STATUS     mandatory
DESCRIPTION
"The current number of unsuccessfull XIDs that have occurred on all dynamic link stations since the last time this node was initialized."
::= { ibmappnXidInformation 4 }

-- **************** The APPN Topology Group ***********************

ibmappnNn OBJECT IDENTIFIER ::= { ibmappn 2  }
ibmappnNnTopo OBJECT IDENTIFIER ::= { ibmappnNn 1  }
ibmappnNnTopology OBJECT IDENTIFIER ::= { ibmappnNn 3  }

-- This group will be used to represent the entire APPN network
-- topology, including Network nodes, virtual nodes and
-- all TGs associated with these nodes.
--
-- Network nodes
-- The APPN topology database consists of information about every
-- APPN network node. This information is learned over time
-- as each network node exchanges topology information with
-- each of its adjacent network nodes. The database consists
-- of information about each node and all of the transmissions
-- groups used by each node.
--
-- Virtual nodes
-- Information about virtual nodes (connection networks) is treated
-- the same as information about network node
-- and is replicated at each network node.
-- The node name is the only meaningful information. The other
-- node objects use default values. Each node that has defined
-- a TG with this virtual node as the destination also defines a
-- TG on this virtual node. There is a TG record for each node
-- that uses this virtual node.
--
-- The APPN node table represents the APPN topology
-- database with the APPN CP fully-qualified name
-- being used as the index to this table.
-- This entire table could be retrieved using the GET NEXT command,
-- however, due to the dynamics of APPN, nodes could come and
-- go and status could change as the table is being
-- retrieved. Although in most cases the data retrieved will be valid,
-- missing and invalid status could cause problems for
-- a management application that was graphically displaying
-- this data.
-- This potential problem can be eliminated by
-- retrieving the FRSN before and after completion
-- of retrieval of the APPN topology table.
-- If the FRSN has changed, then repeat the
-- retrieval of the entire topology table
-- until the FRSN remains unchanged.
-- Object ‘appnNnFrsn’ represents the last
-- change or update to this node’s topology
-- database.
--
-- The format of the actual database is as follows:
--
-- Node table (entry for each node in network)
-- TG table (entry for each TG owned by node)
--
-- Due to SNMP ASN.1 limitations, we cannot represent
-- the TG table within the node table. We define
-- separate tables for nodes and TGs, adding the node
-- name to each TG entry to provide a means of
-- correlating each TG with its originating node.

ibmappnNnTopoMaxNodes OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
 "Maximum number of nodes allowed in the APPN topology
database. This administratively assigned value must be
equal to or greater than the maximum total number of end
nodes and network nodes.
If the number of nodes exceeds this value, APPN will issue
an Alert and the node can no longer participate as a network
node."
 ::= { ibmappnNnTopo 1 }

ibmappnNnTopoCurNumNodes OBJECT-TYPE
SYNTAX Gauge
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Current number of nodes in this node’s topology database. If this value exceeds the maximum number of nodes allowed (NnTopoMaxNodes), APPN alert CPDB002 is issued."
 ::= { ibmappnNnTopo 2 }

ibmappnNnTopoInTdus OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of TDUs received from all adjacent NN since last initialization."
 ::= { ibmappnNnTopo 3 }

ibmappnNnTopoOutTdus OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of TDUs built by this node to be sent to all adjacent NN since last initialization."
 ::= { ibmappnNnTopo 4 }

ibmappnNnTopoNodeLowRsns OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology node updates received by this node with a RSN less than the current RSN. Both even and odd RSN are included in this count. These TDUs are not errors, but result when TDUs are broadcast to all adjacent network nodes. No update to this node’s topology database occurs, but this node will send a TDU with it’s higher RSN to the adjacent node that sent this low RSN."
 ::= { ibmappnNnTopo 5 }

ibmappnNnTopoNodeEqualRsns OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology node updates received by this node with a RSN equal to the current RSN. Both even and odd RSN are included in this count. These TDUs are not errors, but result when TDUs are broadcast to all adjacent network nodes. No update to this node’s topology database occurs."

::=  { ibmappnNnTopo 6 }

ibmappnNnTopoNodeGoodHighRsns    OBJECT-TYPE
SYNTAX   Counter
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
"Total number of topology node updates received by this node with a RSN greater than the current RSN. This results in updating this nodes topology and broadcasting a TDU to all adjacent network nodes. It is not required to send a TDU to the sender of this update because that node already has the update."

::=  { ibmappnNnTopo 7 }

ibmappnNnTopoNodeBadHighRsns    OBJECT-TYPE
SYNTAX   Counter
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
"Total number of topology node updates received by this node with an odd RSN greater than the current RSN. These updates represent a topology inconsistency detected by one of the APPN network nodes. This results in updating this nodes topology and broadcasting a TDU to all adjacent network nodes."

::=  { ibmappnNnTopo 8 }

ibmappnNnTopoNodeStateUpdates    OBJECT-TYPE
SYNTAX   Counter
ACCESS   read-only
STATUS   mandatory
DESCRIPTION
"Total number of topology Node records built as a result
of internally detected node state changes that affect APPN topology and routing. Updates are sent via TDUs to all adjacent network nodes."

::=  { ibmappnNnTopo 9 }

ibmappnNnTopoNodeErrors OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology node records inconsistencies detected by this node. This occurs when this node attempts to update its topology database and detects a data inconsistency. This node will create a TDU with the current RSN incremented to the next odd number and broadcast it to all adjacent NNs."

::=  { ibmappnNnTopo 10 }

ibmappnNnTopoNodeTimerUpdates OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology node records built for this node’s resource due to timer updates. Updates are sent via TDUs to all adjacent network nodes. These updates insure other network nodes do not delete this node’s resources from their topology database."

::=  { ibmappnNnTopo 11 }

ibmappnNnTopoNodePurges OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology node records purged from this node’s topology database. This occurs when a node has not been updated in a specified amount of time. The owning node is responsible for broadcasting updates for its resource that it wants kept in the network topology."

::=  { ibmappnNnTopo 12 }

ibmappnNnTopoTgLowRsns OBJECT-TYPE

McKenzie & Cheng [Page 55]
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG updates received by this node with a RSN less than the current RSN. Both even and odd RSN are included in this count. These TDUs are not errors, but result when TDUs are broadcast to all adjacent network nodes. No update to this node's topology database occurs, but this node will send a TDU with it's higher RSN to the sender of the low RSN."
::= { ibmappnNnTopo 13 }

ibmappnNnTopoTgEqualRsns OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG updates received by this node with a RSN equal to the current RSN. Both even and odd RSN are included in this count. These TDUs are not errors, but result when TDUs are broadcast to all adjacent network nodes. No update to this node's topology database occurs."
::= { ibmappnNnTopo 14 }

ibmappnNnTopoTgGoodHighRsns OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG updates received by this node with a RSN greater than the current RSN. This results in updating this nodes topology and broadcasting the update to all adjacent network nodes."
::= { ibmappnNnTopo 15 }

ibmappnNnTopoTgBadHighRsns OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG updates received by this
node with an odd RSN greater than the current RSN. These updates represent a topology inconsistency detected by one of the APPN network nodes. This results in updating this node's topology and broadcasting a TDU to all adjacent network nodes."

::=  { ibmappnNnTopo 16 }

ibmappnNnTopoTgStateUpdates OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG records built as a result of internally detected node state changes that affect APPN topology and routing. Updates are sent via TDUs to all adjacent network nodes."

::=  { ibmappnNnTopo 17 }

ibmappnNnTopoTgErrors OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG records inconsistencies detected by this node. This occurs when this node attempts to update its topology database and detects a data inconsistency. This node will create a TDU with the current RSN incremented to the next odd number and broadcast it to all adjacent NNs."

::=  { ibmappnNnTopo 18 }

ibmappnNnTopoTgTimerUpdates OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG records built for this node's resource due to timer updates. Updates are sent via TDUs to all adjacent network nodes. These updates insure other network nodes do not delete this node's resources from their topology database."

::=  { ibmappnNnTopo 19 }
ibmappnNnTopoTgPurges OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Total number of topology TG records purged from this node's topology database. This occurs when a TG has not been updated in a specified amount of time. The owning node is responsible for broadcasting updates for its resource that it wants to keep in the network topology."

::= { ibmappnNnTopo 20 }

ibmappnNnTopoTotalRouteCalcs OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of routes calculated for all class of services since the last initialization."

::= { ibmappnNnTopo 21 }

ibmappnNnTopoTotalRouteRejs OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of route requests for all class of services that could not be calculated since last initialization."

::= { ibmappnNnTopo 22 }

ibmappnNnTopoRouteTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnTopoRouteEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table containing an entry for every Class of Service that it has calculated a route for."

::= { ibmappnNnTopo 23 }

ibmappnNnTopoRouteEntry OBJECT-TYPE
SYNTAX IbmappNnTopoRouteEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The Class of Service name is the index for this table."

INDEX

{ibmappNnTopoRouteCos}
::= { ibmappNnTopoRouteTable 1 }

IbmappNnTopoRouteEntry ::= SEQUENCE {
  ibmappNnTopoRouteCos               DisplayString,
  ibmappNnTopoRouteTrees             Counter,
  ibmappNnTopoRouteCalcs             Counter,
  ibmappNnTopoRouteRejs              Counter
}

ibmappNnTopoRouteCos   OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The Class of Service for the route."
::=  { ibmappNnTopoRouteEntry 1 }

ibmappNnTopoRouteTrees OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of routes tree caches built for this Class of Service since the last initialization."
::=  { ibmappNnTopoRouteEntry 2 }

ibmappNnTopoRouteCalcs OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of routes calculated since last initialization."
::=  { ibmappNnTopoRouteEntry 3 }

McKenzie & Cheng
ibmappnNnTopoRouteRejs OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of route requests that could not
be calculated since last initialization."
::= { ibmappnNnTopoRouteEntry 4 }

--Adjacent node table
-- Node name (only applies to adjacent nodes)
-- Number of out of sequence TDUs
-- Status of CP-CP sessions (ConWinner/ConLoser)
-- Last FRSN sent
-- Last FRSN received

ibmappnNnAdjNodeTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnAdjNodeEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table containing an entry for every node. The information
kept in this table is the last FRSN sent and received,
the status of the CP-CP sessions, and a gauge that
indicates the number of outstanding TDUs."
::= { ibmappnNnAdjNodeTable 1 }

IbmappnNnAdjNodeEntry OBJECT-TYPE
SYNTAX IbmappnNnAdjNodeEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The adjacent node name is the index for this table."
INDEX
{ibmappnNnAdjNodeAdjName}
::= { ibmappnNnAdjNodeTable 1 }

IbmappnNnAdjNodeEntry ::= SEQUENCE {
  ibmappnNnAdjNodeAdjName DisplayString,
  ibmappnNnAdjNodeCpCpSessStatus INTEGER,
  ibmappnNnAdjNodeOutOfSeqTdus Gauge,
  ...
}
ibmappnNnAdjNodeLastFrsnSent INTEGER,
ibmappnNnAdjNodeLastFrsnRcvd INTEGER
}

ibmappnNnAdjNodeAdjName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"An administratively-assigned fully-qualified name of this node’s adjacent network node."
::= { ibmappnNnAdjNodeEntry 1 }

ibmappnNnAdjNodeCpCpSessStatus OBJECT-TYPE
SYNTAX INTEGER {
    active(1),
    conLoserActive(2),
    conWinnerActive(3),
    inactive(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates the state of CP-CP sessions between this node and adjacent network and end nodes. Inactive indicates no CP-CP sessions exists between this node and the adjacent node. Active indicates CP-CP sessions are active using both the ConWinner and ConLoser sessions. The session initiated by this node is referred to as the ConWinner session and is used by this node to send to the adjacent node. The ConLoser session is initiated by the adjacent node and is used by this node to receive from the adjacent node."
::= { ibmappnNnAdjNodeEntry 2 }

ibmappnNnAdjNodeOutOfSeqTdus OBJECT-TYPE
SYNTAX Gauge
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of out of sequence Topology Database Updates (TDUs). In a quiesced state, this value is zero. In normal operation, the value varies depending on the network environment."
::= { ibmappnNnAdjNodeEntry 3 }
ibmappnNnAdjNodeLastFrsnSent OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last TDU sent to this adjacent node."

::= { ibmappnNnAdjNodeEntry 4 }

ibmappnNnAdjNodeLastFrsnRcvd OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last TDU received from this adjacent node."

::= { ibmappnNnAdjNodeEntry 5 }

--APPN Node Topology table

-- This table describes every known APPN Network node
-- and Virtual node.

ibmappnNnTopologyTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnTopologyEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Portion of the APPN routing table that describes all of the APPN network nodes and virtual nodes known to this node."

::= { ibmappnNnTopology 1 }

ibmappnNnTopologyEntry OBJECT-TYPE
SYNTAX IbmappnNnTopologyEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The fully-qualified node name is used to index this table."

INDEX
{ibmappnNnNodeName}
::= { ibmappnNnTopologyTable 1 }

IbmappnNnTopologyEntry ::= SEQUENCE {
  ibmappnNnNodeName DisplayString,
  ibmappnNnNodeFrsn INTEGER,
  ibmappnNnNodeEntryTimeLeft INTEGER,
  ibmappnNnNodeType INTEGER,
  ibmappnNnNodeRsn INTEGER,
  ibmappnNnNodeRouteAddResist INTEGER,
  ibmappnNnNodeCongested INTEGER,
  ibmappnNnNodeIsrDepleted INTEGER,
  ibmappnNnNodeEndptDepleted INTEGER,
  ibmappnNnNodeQuiescing INTEGER,
  ibmappnNnNodeGateway INTEGER,
  ibmappnNnNodeCentralDirectory INTEGER,
  ibmappnNnNodeIsr INTEGER,
  ibmappnNnNodeChainSupport INTEGER
}

ibmappnNnNodeName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned network name that is locally defined at each network node in the format NETID.CPNAME."
::= { ibmappnNnTopologyEntry 1 }

ibmappnNnNodeFrsn OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last time this resource was updated at
this node.

::= { ibmappNnTopologyEntry 2 }

ibmappNnNodeEntryTimeLeft OBJECT-TYPE
SYNTAX INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this
network node entry. Range is 0-31."

::= { ibmappNnTopologyEntry 3 }

ibmappNnNodeType OBJECT-TYPE
SYNTAX INTEGER {
  networknode(1),
  virtualnode(3)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Type of APPN node."

::= { ibmappNnTopologyEntry 4 }

ibmappNnNodeRsn OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Resource sequence number that is assigned and
controlled by the network node that owns this
resource. This is always an even 32-bit number
unless an error has occurred."

::= { ibmappNnTopologyEntry 5 }

ibmappNnNodeRouteAddResist OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Route addition resistance
indicates the relative desirability
of using this node for intermediate session traffic.
The value, which can be any integer 0-255,
is used in route computation. The lower the value,
the more desirable the node is for intermediate routing."

 ::=  \{ ibmappnNnTopologyEntry 6 \}

ibmappnNnNodeCongested \hspace{1em} OBJECT-TYPE
SYNTAX INTEGER \{yes(1), no(2)\}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node is congested. This node is not be included in route selection by other nodes when this congestion exists."

 ::=  \{ ibmappnNnTopologyEntry 7 \}

ibmappnNnNodeIsrDepleted \hspace{1em} OBJECT-TYPE
SYNTAX INTEGER \{yes(1), no(2)\}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether intermediate session routing resources are depleted. This node is not included in intermediate route selection by other nodes when resources are depleted."

 ::=  \{ ibmappnNnTopologyEntry 8 \}

ibmappnNnNodeEndptDepleted \hspace{1em} OBJECT-TYPE
SYNTAX INTEGER \{yes(1), no(2)\}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether session endpoint resources are depleted."

 ::=  \{ ibmappnNnTopologyEntry 9 \}

ibmappnNnNodeQuiescing \hspace{1em} OBJECT-TYPE
SYNTAX INTEGER \{yes(1), no(2)\}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is quiescing. This node is not included in route selection by other nodes when the node is quiescing."

 ::=  \{ ibmappnNnTopologyEntry 10 \}

ibmappnNnNodeGateway \hspace{1em} OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node provide gateway functions."
 ::=  { ibmappnNnTopologyEntry 11 }

ibmappnNnNodeCentralDirectory OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is central directory."
 ::=  { ibmappnNnTopologyEntry 12 }

ibmappnNnNodeIsr OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports intermediate session routing (ISR)."
 ::=  { ibmappnNnTopologyEntry 13 }

ibmappnNnNodeChainSupport OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports chaining."
 ::=  { ibmappnNnTopologyEntry 14 }

--APPN transmission group (TG) table
-- This table describes the TGs associated with
-- the APPN network nodes.
-- The originating node is repeated here to provide a
-- means of correlating the TGs with the nodes.

ibmappnNnTgTopologyTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnTgTopologyEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Portion of the APPN topology database
that describes all of the APPN transmissions groups
used by the APPN network nodes."

 ::= { ibmappnNnTopology 2 }

ibmappnNnTgTopologyEntry OBJECT-TYPE
SYNTAX IbmappnNnTgTopologyEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table requires three indexes to provide a
unique index. The indexes are the owning or originating
CPname, the destination CPname, and the TG number."

INDEX
{ibmappnNnTgOwner,
 ibmappnNnTgDest,
 ibmappnNnTgNum}

 ::= { ibmappnNnTgTopologyTable 1 }

IbmappnNnTgTopologyEntry ::= SEQUENCE {
 ibmappnNnTgOwner DisplayString,
 ibmappnNnTgDest DisplayString,
 ibmappnNnTgNum INTEGER,
 ibmappnNnTgFrsn INTEGER,
 ibmappnNnTgEntryTimeLeft INTEGER,
 ibmappnNnTgDestVirtual INTEGER,
 ibmappnNnTgDlcData OCTET STRING,
 ibmappnNnTgRsn INTEGER,
 ibmappnNnTgOperational INTEGER,
 ibmappnNnTgQuiescing INTEGER,
 ibmappnNnTgCpCpSession INTEGER,
 ibmappnNnTgEffCap INTEGER,
 ibmappnNnTgConnCost INTEGER,
 ibmappnNnTgByteCost INTEGER,
 ibmappnNnTgSecurity INTEGER,
 ibmappnNnTgDelay INTEGER,
 ibmappnNnTgModemClass INTEGER,
 ibmappnNnTgUsr1 INTEGER,
 ibmappnNnTgUsr2 INTEGER,
 ibmappnNnTgUsr3 INTEGER}
ibmappnNnTgOwner  OBJECT-TYPE
SYNTAX    DisplayString (SIZE (3..17))
ACCESS    read-only
STATUS    mandatory
DESCRIPTION
    "Administratively-assigned name for the originating node for this TG. The format is NETID.CPNAME and is the same name specified in the node table."
::=  { ibmappnNnTgTopologyEntry 1 }  

ibmappnNnTgDest  OBJECT-TYPE
SYNTAX    DisplayString (SIZE (3..17))
ACCESS    read-only
STATUS    mandatory
DESCRIPTION
    "Administratively-assigned fully-qualified network name for the destination node for this TG."
::=  { ibmappnNnTgTopologyEntry 2 }  

ibmappnNnTgNum  OBJECT-TYPE
SYNTAX    INTEGER  (0..255)
ACCESS    read-only
STATUS    mandatory
DESCRIPTION
    "Number associated with this transmission group. Range is 0-255."
::=  { ibmappnNnTgTopologyEntry 3 }  

ibmappnNnTgFrsn     OBJECT-TYPE
SYNTAX    INTEGER (0..65535)
ACCESS    read-only
STATUS    mandatory
DESCRIPTION
    "Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last time this resource was updated at this node."
::=  { ibmappnNnTgTopologyEntry 4 }  

ibmappnNnTgEntryTimeLeft    OBJECT-TYPE
SYNTAX    INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this
network node TG entry. Range is 0-31."

::=  { ibmappnNnTgTopologyEntry 5 }

ibmappnNnTgDestVirtual OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the destination node is
a virtual node."

::=  { ibmappnNnTgTopologyEntry 6 }

ibmappnNnTgDlcData OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (0..9))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"DLC specific data related to the link connection
network.
Token-Ring      - MAC/SAP
X.25 Switched   - dial digits
X.21 Switched   - dial digits
Circuit Swtch   - dial digits"

::=  { ibmappnNnTgTopologyEntry 7 }

ibmappnNnTgResn OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Current owning node’s resource sequence number
for this resource."

::=  { ibmappnNnTgTopologyEntry 8 }

ibmappnNnTgOperational OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the transmission group
is operational."

::=  { ibmappnNnTgTopologyEntry 9 }

ibmappnNnTgQuiescing OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the transmission group
is quiescing."

::=  { ibmappnNnTgTopologyEntry 10 }

ibmappnNnTgCpCpSession OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether CP-CP sessions are supported on this TG."

::=  { ibmappnNnTgTopologyEntry 11 }

ibmappnNnTgEffCap OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The effective capacity is an integer value that indicates
the kilo bits per second. It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776. This is an administratively assigned value associated
with this TG."

::=  { ibmappnNnTgTopologyEntry 12 }

ibmappnNnTgConnCost OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Cost per connect time: a value representing
the relative cost per unit of time to use
the TG. Range is from 0, which means no cost,
to 255, which indicates maximum cost.
This is an administratively assigned value associated
with this TG."

::=  { ibmappnNnTgTopologyEntry 13 }

ibmappnNnTgByteCost  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative cost of transmitting a byte over this link. Range is from 0 (lowest cost) to 255. This is an administratively assigned value associated with this TG."

::=  { ibmappnNnTgTopologyEntry 14 }

ibmappnNnTgSecurity  OBJECT-TYPE
SYNTAX INTEGER {
  nonsecure(1), --X'01'
  publicSwitchedNetwork(32), --X'20'
  undergroundCable(64), --X'40'
  secureConduit(96), --X'60'
  guardedConduit(128), --X'80'
  encrypted(160), --X'A0'
  guardedRadiation(192) --X'C0'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The security is represented as an integer with a range of 1 thru 255 with the most common values enumerated as defined above. This is an administratively assigned value associated with this TG."

::=  { ibmappnNnTgTopologyEntry 15 }

ibmappnNnTgDelay  OBJECT-TYPE
SYNTAX INTEGER {
  minimum(0), --X'00'
  negligible(384), --X'4C'
  terrestrial(19216), --X'71'
  packet(147456), --X'91'
  long(294912), --X'99'
  maximum(2013265920) --X'FF'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative amount of time that it takes for a signal to
travel the length of the logical link. This time is
represented in micro seconds, with some of the more
common values enumerated.
This is an administratively assigned value associated
with this TG."

::=  

ibmappnNnTgModemClass OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This is used to have multiple images for a
connection network. For a connection network
it is the same as in the TG vector; for
a non-connection network it is X'00'."

::=  

ibmappnNnTgUsr1 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"First user-defined TG characteristic for this TG with
a range of 0-255.
This is an administratively assigned value associated
with this TG."

::=  

ibmappnNnTgUsr2 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Second user-defined TG characteristic for this TG with
a range of 0-255.
This is an administratively assigned value associated
with this TG."

::=  

McKenzie & Cheng
ibmappnNnTgUsr3  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Third user-defined TG characteristic for this TG with
a range of 0-255.
This is an administratively assigned value associated
with this TG."
::=  { ibmappnNnTgTopologyEntry 20 }

-- APPN Node Topology table (using FRSN as index)
-- This table describes every known APPN Network node
-- and Virtual node.

ibmappnNnTopologyFRTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnTopologyFREntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Portion of the APPN routing table
that describes all of the APPN network nodes
and virtual nodes known to this node."
::= { ibmappnNnTopology 3 }

IbmappnNnTopologyFREntry OBJECT-TYPE
SYNTAX IbmappnNnTopologyFREntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by two columns:
FRSN, followed by fully-qualified node name."
INDEX
{ibmappnNnNodeFRFrsn, ibmappnNnNodeFRName}
::= { ibmappnNnTopologyFRTable 1 }

IbmappnNnTopologyFREntry ::= SEQUENCE {
  ibmappnNnNodeFRName               DisplayString,
  ibmappnNnNodeFRFrsn               INTEGER,
  ibmappnNnNodeFREntryTimeLeft      INTEGER,

McKenzie & Cheng
ibmappnNnNodeFRType INTEGER,
ibmappnNnNodeFRRsn INTEGER,
ibmappnNnNodeFRRouteAddResist INTEGER,
ibmappnNnNodeFRCongested INTEGER,
ibmappnNnNodeFRIsrDepleted INTEGER,
ibmappnNnNodeFREndptDepleted INTEGER,
ibmappnNnNodeFRQuiescing INTEGER,
ibmappnNnNodeFRGateway INTEGER,
ibmappnNnNodeFRCentralDirectory INTEGER,
ibmappnNnNodeFRIsr INTEGER,
ibmappnNnNodeFRChainSupport INTEGER

ibmappnNnNodeFRName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned network name that is locally
defined at each network node in the format NETID.CPNAME."
::= { ibmappnNnTopologyFREntry 1 }

ibmappnNnNodeFRFrsn OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated
with Topology Database Updates (TDUs) and are unique
only within each APPN network node. A TDU can be
associated with multiple APPN resources. This FRSN
indicates the last time this resource was updated at
this node."
::= { ibmappnNnTopologyFREntry 2 }

ibmappnNnNodeFREntryTimeLeft OBJECT-TYPE
SYNTAX INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this
network node entry. Range is 0-31."
::= { ibmappnNnTopologyFREntry 3 }

McKenzie & Cheng
ibmappnNnNodeFRTYPE OBJECT-TYPE
SYNTAX INTEGER {
    networknode(1),
    virtualnode(3)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Type of APPN node."
::= { ibmappnNnTopologyFREntry 4 }

ibmappnNnNodeFRRsn OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Resource sequence number that is assigned and
controlled by the network node that owns this
resource. This is always an even 32-bit number
unless an error has occurred."
::= { ibmappnNnTopologyFREntry 5 }

ibmappnNnNodeFRRouteAddResist OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Route addition resistance
indicates the relative desirability
of using this node for intermediate session traffic.
The value, which can be any integer 0-255,
is used in route computation. The lower the value,
the more desirable the node is for intermediate routing."
::= { ibmappnNnTopologyFREntry 6 }

ibmappnNnNodeFRCongested OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether this node is congested.
This node is not be included in route selection
by other nodes when this congestion exists."
::= { ibmappnNnTopologyFREntry 7 }
ibmappnNnNodeFRIsrDepleted OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether intermediate session routing resources are depleted. This node is not included in intermediate route selection by other nodes when resources are depleted."

::= { ibmappnNnTopologyFREntry 8 }

ibmappnNnNodeFREndptDepleted OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether session endpoint resources are depleted."

::= { ibmappnNnTopologyFREntry 9 }

ibmappnNnNodeFRQuiescing OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is quiescing. This node is not included in route selection by other nodes when the node is quiescing."

::= { ibmappnNnTopologyFREntry 10 }

ibmappnNnNodeFRGateway OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node provide gateway functions."

::= { ibmappnNnTopologyFREntry 11 }

ibmappnNnNodeFRCentralDirectory OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is central directory."

::= { ibmappnNnTopologyFREntry 12 }
ibmappnNnNodeFRIsr OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports intermediate session routing (ISR)."
 ::= { ibmappnNnTopologyFREntry 13 }

ibmappnNnNodeFRChainSupport OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports chaining."
 ::= { ibmappnNnTopologyFREntry 14 }

--APPN transmission group (TG) table
-- This table describes the TGs associated with
-- the APPN network nodes.
-- The originating node is repeated here to provide a
-- means of correlating the TGs with the nodes.

ibmappnNnTgTopologyFRTTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnNnTgTopologyFREntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Portion of the APPN topology database
describes all of the APPN transmissions groups
used by the APPN network nodes."
 ::= { ibmappnNnTopology 4 }

ibmappnNnTgTopologyFREntry OBJECT-TYPE
SYNTAX IbmappnNnTgTopologyFREntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by four columns:
FRSN, TG owner fully-qualified node name,
TG destination fully-qualified node name, and TG number."
INDEX
ibmappnNnTgFROwner ::= DisplayString(SIZE(3..17))
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for the originating node for this TG. The format is NETID.CPNAME and is the same name specified in the node table."
::= { ibmappnNnTgTopologyFREntry 1 }

ibmappnNnTgFRDest OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only

McKenzie & Cheng
STATUS mandatory
DESCRIPTION
"Administratively-assigned fully-qualified network name for the destination node for this TG."

::=  { ibmappnNnTgTopologyFREntry 2 }

ibmappnNnTgFRNum  OBJECT-TYPE
SYNTAX INTEGER  (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number associated with this transmission group. Range is 0-255."

::=  { ibmappnNnTgTopologyFREntry 3 }

ibmappnNnTgFRFrsn             OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last time this resource was updated at this node."

::=  { ibmappnNnTgTopologyFREntry 4 }

ibmappnNnTgFREntryTimeLeft    OBJECT-TYPE
SYNTAX INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this network node TG entry. Range is 0-31."

::=  { ibmappnNnTgTopologyFREntry 5 }

ibmappnNnTgFRDestVirtual  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the destination node is a virtual node."
ibmappnNnTgFRDlcData  OBJECT-TYPE
SYNTAX  OCTET STRING  (SIZE (0..9))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"DLC specific data related to the link connection network.
Token-Ring    - MAC/SAP
X.25 Switched - dial digits
X.21 Switched - dial digits
Circuit Swtch - dial digits"

ibmappnNnTgFRRsn  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Current owning node’s resource sequence number for this resource."

ibmappnNnTgFROperational  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the transmission group is operational."

ibmappnNnTgFRQuiescing  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the transmission group is quiescing."

ibmappnNnTgFRCpCpSession  OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether CP-CP sessions are supported on this TG."

::=  { ibmappnNnTgTopologyFREntry 11 }

ibmappnNnTgFREffCap  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The effective capacity is an integer value that indicates
the kilo bits per second.
It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776.
This is an administratively assigned value associated
with this TG."

::=  { ibmappnNnTgTopologyFREntry 12 }

ibmappnNnTgFRConnCost  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Cost per connect time: a value representing
the relative cost per unit of time to use
the TG. Range is from 0, which means no cost,
to 255, which indicates maximum cost.
This is an administratively assigned value associated
with this TG."

::=  { ibmappnNnTgTopologyFREntry 13 }

ibmappnNnTgFRByteCost  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative cost of transmitting a byte over this link.
Range is from 0 (lowest cost) to 255.
This is an administratively assigned value associated
with this TG."

::=  { ibmappnNnTgTopologyFREntry 14 }
ibmappnNnTgFRSecurity OBJECT-TYPE
SYNTAX INTEGER {
  nonsecure(1), --X'01'
  publicSwitchedNetwork(32), --X'20'
  undergroundCable(64), --X'40'
  secureConduit(96), --X'60'
  guardedConduit(128), --X'80'
  encrypted(160), --X'A0'
  guardedRadiation(192) --X'C0'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The security is represented as an integer with a range of 1 thru 255 with the most common values enumerated as defined above.
This is an administratively assigned value associated with this TG."
::= { ibmappnNnTgTopologyFREntry 15 }

ibmappnNnTgFRDelay OBJECT-TYPE
SYNTAX INTEGER {
  minimum(0), --X'00'
  negligible(384), --X'4C'
  terrestrial(9216), --X'71'
  packet(147456), --X'91'
  long(294912), --X'99'
  maximum(2013265920) --X'FF'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative amount of time that it takes for a signal to travel the length of the logical link. This time is represented in micro seconds, with some of the more common values enumerated.
This is an administratively assigned value associated with this TG."
::= { ibmappnNnTgTopologyFREntry 16 }

ibmappnNnTgFRModemClass OBJECT-TYPE
SYNTAX INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This is used to have multiple images for a
connection network. For a connection network it is the same as in the TG vector; for a non-connection network it is X’00’.

::=  { ibmappnNnTgTopologyFREntry 17 }

ibmappnNnTgFRUsr1 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"First user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with this TG."

::=  { ibmappnNnTgTopologyFREntry 18 }

ibmappnNnTgFRUsr2 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Second user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with this TG."

::=  { ibmappnNnTgTopologyFREntry 19 }

ibmappnNnTgFRUsr3 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Third user-defined TG characteristic for this TG with a range of 0-255. This is an administratively assigned value associated with this TG."

::=  { ibmappnNnTgTopologyFREntry 20 }

-- ************** The APPN Local Topology Group **************

ibmappnLocalTopology OBJECT IDENTIFIER ::= { ibmappn 3 }
ibmappnLocalThisNode OBJECT IDENTIFIER ::= { ibmappnLocalTopology 1 }
ibmappnLocalGeneral OBJECT IDENTIFIER ::= { ibmappnLocalThisNode 1}
ibmappnLocalNnSpecific OBJECT IDENTIFIER ::= { ibmappnLocalThisNode 2}
ibmappnLocalTg OBJECT IDENTIFIER ::= { ibmappnLocalThisNode 3}
ibmappnLocalEnTopology OBJECT IDENTIFIER ::= { ibmappnLocalTopology 2 }

-- The LocalEnNodeTable and LocalEnTgTable will replace these OIs
--ibmappnLocalEnNode OBJECT IDENTIFIER ::= { ibmappnLocalEnTopology 1}
--ibmappnLocalEnTg OBJECT IDENTIFIER ::= { ibmappnLocalEnTopology 2}

--This MIB Group represents the local topology
--maintained in both APPN end nodes and network nodes.
--Although the same control vectors are used for both network
--and local topology, many of the attributes only apply to network
--nodes. This MIB group defines the required objects for retrieval
--of information about this node and the objects that represent
--the local topology about end nodes.
--
--This node could be either an network node or an end node. The
--definition must address both cases.
--
--1  Information about this node
--   a  General information about this node, both NN and ENs.
--   b  Information about this node that applies only to NNs.
--   c  TG table      (repeated for each TG this node owns)
--
--2  Information about the end nodes known to this network node
--   (THIS SECTION ONLY APPLIES TO NETWORK NODES)
--   a  End node table (entry for each end node )
--   b  TG table      (repeated for each TG owned by the end nodes)
--

----
-- General information section

ibmappnLocalNodeName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION "Administratively-assigned fully-qualified name
for this node. Format is NETID.CPNAME."
::= { ibmappnLocalGeneral 1 }

ibmappnLocalNodeType OBJECT-TYPE
RFC 1593                   SNA APPN Node MIB                  March 1994

SYNTAX INTEGER {
    networknode(1),
    endnode(2),
    len(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Type of APPN node."
::=  { ibmappnLocalGeneral 2 }

-- Network node unique information
--

ibmappnLocalNnRsn      OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Resource sequence number is assigned and
controlled by the network node that owns this
resource. This is always an even unsigned
number unless an error has occurred."
::=  { ibmappnLocalNnSpecific 1 }

ibmappnLocalNnRouteAddResist   OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Route addition resistance
indicates the relative desirability
of using this node for intermediate session traffic.
The value, which can be any integer 0-255,
is used in route computation. The lower the value,
the more desirable the node is for intermediate routing."
::=  { ibmappnLocalNnSpecific 2 }

ibmappnLocalNnCongested      OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Indicates whether this node is congested."
Other network nodes stop routing traffic to this node while this flag is on."

::= { ibmappnLocalNnSpecific 3 }

ibmappnLocalNnIsrDepleted OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicate whether intermediated session routing resources are depleted.
Other network nodes stop routing traffic through this node while this flag is on."

::= { ibmappnLocalNnSpecific 4 }

ibmappnLocalNnEndptDepleted OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether session endpoint resources are depleted."

::= { ibmappnLocalNnSpecific 5 }

ibmappnLocalNnQuiescing OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is quiescing."

::= { ibmappnLocalNnSpecific 6 }

ibmappnLocalNnGateway OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is a gateway."

::= { ibmappnLocalNnSpecific 7 }

ibmappnLocalNnCentralDirectory OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node is a central directory."

::= { ibmappnLocalNnSpecific 8 }

ibmappnLocalNnIsr OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports intermediate
session routing."

::= { ibmappnLocalNnSpecific 9 }

ibmappnLocalNnChainSupport OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the node supports chaining."

::= { ibmappnLocalNnSpecific 10 }

ibmappnLocalNnFrsn OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Flow reduction sequence numbers (FRSNs) are associated
with Topology Database Updates (TDUs) and are unique
only within each APPN network node. A TDU can be
associated with multiple APPN resources. This object
is the last FRSN sent in a topology update to
adjacent network nodes."

::= { ibmappnLocalNnSpecific 11 }

-- Local TG information
-- APPN Transmission Group (TG) Table
-- This table describes the TGs associated with
-- this node only.

ibmappnLocalTgTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnLocalTgEntry
TG Table describes all of the TGs owned by this node. The TG destination can be a virtual node, network node, len, or end node.

::= { ibmappnLocalTg 1 }

ibmappnLocalTgEntry OBJECT-TYPE
SYNTAX IbmappnLocalTgEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the destination CPname and the TG number."

INDEX
{ibmappnLocalTgDest,
 ibmappnLocalTgNum}

::= { ibmappnLocalTgTable 1 }

IbmappnLocalTgEntry ::= SEQUENCE {
 ibmappnLocalTgDest       DisplayString,
 ibmappnLocalTgNum        INTEGER,
 ibmappnLocalTgDestVirtual INTEGER,
 ibmappnLocalTgDlcData    OCTET STRING,
 ibmappnLocalTgRsn        INTEGER,
 ibmappnLocalTgQuiescing  INTEGER,
 ibmappnLocalTgOperational INTEGER,
 ibmappnLocalTgCpCpSession INTEGER,
 ibmappnLocalTgEffCap     INTEGER,
 ibmappnLocalTgConnCost   INTEGER,
 ibmappnLocalTgByteCost   INTEGER,
 ibmappnLocalTgSecurity   INTEGER,
 ibmappnLocalTgDelay      INTEGER,
 ibmappnLocalTgModemClass INTEGER,
 ibmappnLocalTgUsr1       INTEGER,
 ibmappnLocalTgUsr2       INTEGER,
 ibmappnLocalTgUsr3       INTEGER
}

ibmappnLocalTgDest OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for the
destination node for this TG.
This is the fully-qualified network node
name."
::=  { ibmappnLocalTgEntry 1 }

ibmappnLocalTgNum OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number associated with this transmission group."
::=  { ibmappnLocalTgEntry 2 }

ibmappnLocalTgDestVirtual OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the destination node is
a Virtual node."
::=  { ibmappnLocalTgEntry 3 }

ibmappnLocalTgDlcData OBJECT-TYPE
SYNTAX OCTET STRING  (SIZE (0..9))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"DLC specific data related to the link connection
network.
Token-Ring    - MAC/SAP
X.25 Switched - dial digits
X.21 Switched - dial digits
Circuit Swtch - dial digits"
::=  { ibmappnLocalTgEntry 4 }

ibmappnLocalTgRsn OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The resource sequence number is assigned and
controlled by the network node that owns this
resource. This is always an even unsigned number unless an error has occurred.

 ::= { ibmappnLocalTgEntry 5 }

ibmappnLocalTgQuiescing OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the Transmission Group is quiescing."

 ::= { ibmappnLocalTgEntry 6 }

ibmappnLocalTgOperational OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the Transmission Group is operational."

 ::= { ibmappnLocalTgEntry 7 }

ibmappnLocalTgCpCpSession OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the CP-CP Sessions are supported on this TG."

 ::= { ibmappnLocalTgEntry 8 }

ibmappnLocalTgEffCap OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The effective capacity is an integer value that indicates the actual kilo bits per second. It is derived from the link bandwidth and maximum load factor with the range of 0 thru 603,979,776."

 ::= { ibmappnLocalTgEntry 9 }

ibmappnLocalTgConnCost OBJECT-TYPE
SYNTAX INTEGER (0..255)  
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Cost per connect time: a value representing  
the relative cost per unit of time to use  
the TG. Range is from 0, which means no cost,  
to 255."

::=  { ibmappnLocalTgEntry 10 }

ibmappnLocalTgByteCost  OBJECT-TYPE  
SYNTAX INTEGER (0..255)  
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Relative cost of transmitting a byte over this link.  
Range is from 0 (lowest cost) to 255."

::=  { ibmappnLocalTgEntry 11 }

ibmappnLocalTgSecurity  OBJECT-TYPE  
SYNTAX INTEGER {  
  nonsecure(1),               --X'01'  
  publicSwitchedNetwork(32),  --X'20'  
  undergroundCable(64),       --X'40'  
  secureConduit(96),          --X'60'  
  guardedConduit(128),        --X'80'  
  encrypted(160),             --X'A0'  
  guardedRadiation(192),      --X'C0'  
}  
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Security level for this TG."

::=  { ibmappnLocalTgEntry 12 }

ibmappnLocalTgDelay  OBJECT-TYPE  
SYNTAX INTEGER {  
  minimum(0),                 --X'00'  
  negligible(384),            --X'4C'  
  terrestrial(9216),          --X'71'  
  packet(147456),             --X'91'  
  long(294912),               --X'99'  
  maximum(2013265920)         --X'FF'  
}  
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Relative amount of time that it takes for a signal to travel the length of the logical link. This time is represented in micro seconds, with some of the more common values enumerated."

::=  { ibmappnLocalTgEntry 13 }

ibmappnLocalTgModemClass  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This is used to have multiple images for a connection network. For a connection network it is the same as in the TG vector and for a non-connection network it is zero."

::=  { ibmappnLocalTgEntry 14 }

ibmappnLocalTgUsr1  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Value of the first user-defined TG characteristic for this TG. Range is 0-255."

::=  { ibmappnLocalTgEntry 15 }

ibmappnLocalTgUsr2  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Value of the second user-defined TG characteristic for this TG. Range is 0-255."

::=  { ibmappnLocalTgEntry 16 }

ibmappnLocalTgUsr3  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Value of the third user-defined TG characteristic for this TG.
Range is 0-255."

::= { ibmappnLocalTgEntry 17 }

-- This section applies only to network nodes.
-- It contains end node topology information known to serving
-- network node.
-- The first table contains information about all end nodes
-- known to this node.
--
-- The TG table contains information about all of the TGs owned
-- by these end nodes.

ibmappnLocalEnTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnLocalEnEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Portion of the APPN topology
database that describes the end
nodes known to this node."

::= { ibmappnLocalEnTopology 1 }

ibmappnLocalEnEntry OBJECT-TYPE
SYNTAX IbmappnLocalEnEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the end node CPname."

INDEX
{ibmappnLocalEnName}
::= { ibmappnLocalEnTable 1 }

IbmappnLocalEntry ::= SEQUENCE {
    ibmappnLocalEnName                     DisplayString,
    ibmappnLocalEnEntryTimeLeft            INTEGER,
    ibmappnLocalEnType                     INTEGER
}

ibmappnLocalEnName OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))

McKenzie & Cheng                                               [Page 93]
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned fully-qualified
name of end node in the format NETID.CPNAME."

::= { ibmappnLocalEnEntry 1 }

ibmappnLocalEnEntryTimeLeft OBJECT-TYPE
SYNTAX INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this
end node entry. Range is 0-31."

::= { ibmappnLocalEnEntry 2 }

ibmappnLocalEnType OBJECT-TYPE
SYNTAX INTEGER {
   endnode(2),
   len(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Type of APPN node (must always be a len or end node)."

::= { ibmappnLocalEnEntry 3 }

--APPN Local End node Transmission Group (TG) table
-- This table describes the TGs associated with
-- all of the end nodes known to this node.

ibmappnLocalEnTgTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnLocalEnTgEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table describing all of the TGs owned by the
end nodes known to this node.
The TG destination can be a virtual
node, network node, or end node."

::= { ibmappnLocalEnTopology 2 }
ibmappnLocalEnTgEntry OBJECT-TYPE  
SYNTAX  IbmappnLocalEnTgEntry  
ACCESS  not-accessible  
STATUS  mandatory  
DESCRIPTION  
"This table requires multiple indexes to uniquely identify each TG. They are originating CPname, destination CPname, and the TG number."

INDEX  
{ibmappnLocalEnTgOrigin,  
 ibmappnLocalEnTgDest,  
 ibmappnLocalEnTgNum}  
::= { ibmappnLocalEnTgTable 1 }

IbmappnLocalEnTgEntry ::= SEQUENCE {  
 ibmappnLocalEnTgOrigin     DisplayString,  
 ibmappnLocalEnTgDest       DisplayString,  
 ibmappnLocalEnTgNum        INTEGER,  
 ibmappnLocalEnTgEntryTimeLeft INTEGER,  
 ibmappnLocalEnTgDestVirtual INTEGER,  
 ibmappnLocalEnTgDlcData    OCTET STRING,  
 ibmappnLocalEnTgOperational INTEGER,  
 ibmappnLocalEnTgCpCpSession INTEGER,  
 ibmappnLocalEnTgEffCap     INTEGER,  
 ibmappnLocalEnTgConnCost   INTEGER,  
 ibmappnLocalEnTgByteCost   INTEGER,  
 ibmappnLocalEnTgSecurity   INTEGER,  
 ibmappnLocalEnTgDelay      INTEGER,  
 ibmappnLocalEnTgModemClass INTEGER,  
 ibmappnLocalEnTgUsr1       INTEGER,  
 ibmappnLocalEnTgUsr2       INTEGER,  
 ibmappnLocalEnTgUsr3       INTEGER  
 }

ibmappnLocalEnTgOrigin OBJECT-TYPE  
SYNTAX  DisplayString (SIZE (3..17))  
ACCESS  read-only  
STATUS  mandatory  
DESCRIPTION  
"Administratively-assigned name for the origination node for this TG. This is the fully-qualified network name."

::= { ibmappnLocalEnTgEntry 1 }

McKenzie & Cheng [Page 95]
ibmappnLocalEnTgDest OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for the
destination node for this TG.
This is the fully-qualified network name."
::= { ibmappnLocalEnTgEntry 2 }

ibmappnLocalEnTgNum OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number associated with this transmission group."
::= { ibmappnLocalEnTgEntry 3 }

ibmappnLocalEnTgEntryTimeLeft OBJECT-TYPE
SYNTAX INTEGER (0..31)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of days before deletion of this
end node TG entry. Range is 0-31."
::= { ibmappnLocalEnTgEntry 4 }

ibmappnLocalEnTgDestVirtual OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the destination node is
a virtual node."
::= { ibmappnLocalEnTgEntry 5 }

ibmappnLocalEnTgDlcData OBJECT-TYPE
SYNTAX OCTET STRING
ACCESS read-only
STATUS mandatory
DESCRIPTION
"DLC specific data related to the link connection
network.
Token-Ring    - MAC/SAP
X.25 Switched - dial digits
X.21 Switched - dial digits
Circuit Switch - dial digits

::=  { ibmappnLocalEnTgEntry 6 }

ibmappnLocalEnTgOperational OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether the Transmission Group is operational."

::=  { ibmappnLocalEnTgEntry 7 }

ibmappnLocalEnTgCp CpSession OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether CP-CP sessions are supported on this TG."

::=  { ibmappnLocalEnTgEntry 8 }

ibmappnLocalEnTgEffCap OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"The effective capacity is an integer value that indicates
the actual kilo bits per second.
It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776."

::=  { ibmappnLocalEnTgEntry 9 }

ibmappnLocalEnTgConnCost OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Cost per connect time: a value representing
the relative cost per unit of time to use
the TG. Range is from 0, which means no cost,
to 255."

::=  { ibmappnLocalEnTgEntry 10 }

McKenzie & Cheng
ibmappnLocalEnTgByteCost  OBJECT-TYPE  
SYNTAX  INTEGER (0..255)  
ACCESS  read-only  
STATUS  mandatory  
DESCRIPTION  "Relative cost of transmitting a byte over this link. Range is from 0, which means no cost, to 255."
 ::= { ibmappnLocalEnTgEntry 11 }

ibmappnLocalEnTgSecurity  OBJECT-TYPE  
SYNTAX  INTEGER {  
  nonsecure(1),              --X'01'  
  publicSwitchedNetwork(32), --X'20'  
  undergroundCable(64),      --X'40'  
  secureConduit(96),         --X'60'  
  guardedConduit(128),       --X'80'  
  encrypted(160),           --X'A0'  
  guardedRadiation(192)      --X'C0'  
}  
ACCESS  read-only  
STATUS  mandatory  
DESCRIPTION  "Security level for this TG."
 ::= { ibmappnLocalEnTgEntry 12 }

ibmappnLocalEnTgDelay  OBJECT-TYPE  
SYNTAX  INTEGER {  
  minimum(0),                 --X'00'  
  negligible(384),            --X'4C'  
  terrestrial(9216),          --X'71'  
  packet(147456),             --X'91'  
  long(294912),               --X'99'  
  maximum(2013265920)         --X'FF'  
}  
ACCESS  read-only  
STATUS  mandatory  
DESCRIPTION  "Relative amount of time that it takes for a signal to travel the length of the logical link. This time is represented in micro seconds, with some of the more common values enumerated."
 ::= { ibmappnLocalEnTgEntry 13 }

ibmappnLocalEnTgModemClass  OBJECT-TYPE  
SYNTAX  INTEGER (0..65535)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"This is used to have multiple images for a
connection network. For a connection network
it is the same as in the TG vector and for
a non connection network it is zero."

::=  { ibmappnLocalEnTgEntry 14 }

ibmappnLocalEnTgUsr1 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"First user-defined TG characteristic
for this TG. Range of values is 0-255."

::=  { ibmappnLocalEnTgEntry 15 }

ibmappnLocalEnTgUsr2 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Second user-defined TG characteristic
for this TG. Range of values is 0-255."

::=  { ibmappnLocalEnTgEntry 16 }

ibmappnLocalEnTgUsr3 OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Third user-defined TG characteristic
for this TG. Range of values is 0-255."

::=  { ibmappnLocalEnTgEntry 17 }

-- ************** The APPN Directory group ***************
ibmappnDir      OBJECT IDENTIFIER ::= { ibmappn 5 }
ibmappnDirPerf  OBJECT IDENTIFIER ::= { ibmappnDir 1 }

-- The APPN Directory Group

-- The APPN Directory Database
Each APPN network node maintains directories containing
information on which LUs (applications) are available and
where they are located. LUs can be located within an APPN
network node or in any of the attached end nodes.

Max Cache Directory Entries
Current Number of Cache Entries
Current Number Home Entries
Current Number of Registered Entries
number of directed locates sent
number of directed locates received
number of broadcast locates sent
number of broadcast locates received
Number of locates returned with a found
Number of locates returned with a not found
Number of outstanding Locates
Directory table (Repeated for each Serving NN)

Serving Network Node Fully Qualified CP Name

LU Groups within Directory table (one for each LU)
Fully-qualified LU Name
Owning fully-qualified CP Name
TP Name
Resource location (local/domain/cross-domain)
Entry type (home, Register/cache)
Wildcard (yes/no)

ibmappnDirMaxCaches OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum number of cache entries allowed. This
is an administratively assigned value."
::= { ibmappnDirPerf 1 }

ibmappnDirCurCaches OBJECT-TYPE
SYNTAX Gauge
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Current number of cache entries."
::= { ibmappnDirPerf 2 }
ibmappnDirCurHomeEntries  OBJECT-TYPE
SYNTAX  Gauge
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "Current number of home entries."
 ::=  { ibmappnDirPerf 3 }

ibmappnDirRegEntries OBJECT-TYPE
SYNTAX  Gauge
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "Current number of registered entries."
 ::=  { ibmappnDirPerf 4 }

ibmappnDirInLocates   OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "Number of directed locates received."
 ::=  { ibmappnDirPerf 5 }

ibmappnDirInBcastLocates   OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "Number of broadcast locates received."
 ::=  { ibmappnDirPerf 6 }

ibmappnDirOutLocates   OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS  mandatory
DESCRIPTION
 "Number of directed locates sent."
 ::=  { ibmappnDirPerf 7 }

ibmappnDirOutBcastLocates   OBJECT-TYPE
SYNTAX  Counter
ACCESS  read-only
STATUS mandatory
DESCRIPTION
"Number of broadcast locates sent."
::= { ibmappnDirPerf 8 }

ibmappnDirNotFoundLocates OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of directed locates returned with a 'not found'."
::= { ibmappnDirPerf 9 }

ibmappnDirNotFoundBcastLocates OBJECT-TYPE
SYNTAX Counter
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Number of broadcast locates returned with a not found."
::= { ibmappnDirPerf 10 }

ibmappnDirLocateOutstands OBJECT-TYPE
SYNTAX Gauge
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Current number of outstanding locates, both directed and broadcast. This value varies. A value of zero indicates that no locates are unanswered."
::= { ibmappnDirPerf 11 }

--APPN Directory table

-- This table contains information about all known LUs and TPs.

ibmappnDirTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnDirEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table containing information about all known LUs and TPs."

::= { ibmappnDir 2 }

ibmappnDirEntry OBJECT-TYPE
SYNTAX IbmappnDirEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the LU name."
INDEX
{ibmappnDirLuName}
::= { ibmappnDirTable 1 }

IbmappnDirEntry ::= SEQUENCE {
  ibmappnDirLuName                   DisplayString,
  ibmappnDirServerName               DisplayString,
  ibmappnDirLuOwnerName              DisplayString,
  ibmappnDirLuLocation               INTEGER,
  ibmappnDirType                     INTEGER,
  ibmappnDirWildCard                 INTEGER
}

ibmappnDirLuName          OBJECT-TYPE
SYNTAX DisplayString  (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Fully-qualified network LU name in the domain of the serving network node."
::= { ibmappnDirEntry 1 }

ibmappnDirServerName        OBJECT-TYPE
SYNTAX DisplayString (SIZE (3..17))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Fully-qualified control point (CP) name of the network node server. For unassociated end node entries, the end node fully-qualified name is returned."
::= { ibmappnDirEntry 2 }
ibmappnDirLuOwnerName OBJECT-TYPE  
SYNTAX DisplayString (SIZE (3..17))  
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Fully-qualified CP name of the node at which  
the LU is located. This name is the same as the  
serving NN name when the LU is located at a  
network node or an unassociated end node. It is  
also the same as the fully-qualified LU name  
when this is the control point LU for this node."

::=  { ibmappnDirEntry 3 }

ibmappnDirLuLocation OBJECT-TYPE  
SYNTAX INTEGER {
    local(1),       --Local  
    domain(2),      --Domain  
    xdomain(3)       --Cross Domain
}
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Specifies the location of the LU."

::=  { ibmappnDirEntry 4 }

ibmappnDirType OBJECT-TYPE  
SYNTAX INTEGER {
    home(1),        --defined as home entry  
    cache(2),       --learned over time  
    registered(3)   --registered by end node
}
ACCESS read-only  
STATUS mandatory  
DESCRIPTION  
"Directory types are:
1 - Home
The LU is in the domain of the local network node
and the LU information has been configured at the
local node.

2 - Cache
The LU has previously been located by a broadcast
search and the location information has been saved.

3 - Register"
The LU is at an end node that is in the domain of the local network node. Registered entries are registered by the served end node.

::= { ibmappnDirEntry 5 }

ibmappnDirWildCard OBJECT-TYPE
SYNTAX INTEGER {
    other(1),
    explicit-entry(2),
    partial-wildcard(3),
    full-wildcard(4)
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"1 - Other means unknown type of LU entry.
2 - Explicit-entry means the full LUNAME will be used for locating this LU.
3 - Partial-wildcard means only the non-blank portions of the LUNAME will be used for locating this LU.
4 - Full-wildcard means all LUNAMES will be directed to this LU."

::= { ibmappnDirEntry 6 }

-- ************** The APPN Class of Service group **************

ibmappnCos OBJECT IDENTIFIER ::= { ibmappn 6 } --APPN COS

-- The APPN Class of Service (COS)

-- Class of Service is a means of expressing the quality of the routes
-- and the transmission priority of traffic which flows on these routes.
-- The quality of routes is specified by two tables, a COS weight table
-- for TGs and a COS weight table for nodes. These COS tables are
-- administratively assigned at each APPN node. Seven default tables
-- for TGs and a COS weight table for Nodes. These COS tables are
-- administratively assigned at each APPN node with seven default tables
-- being provided by IBM.
--
-- COS Name
-- Unqualified name identifying the class of service.
-- Transmission priority
-- Transmission priority associated with this class of service
-- COS Node Row Table
-- At least one node row must be specified. The default
-- COS tables specify 8 rows.
-- Node Row Weight
-- Numeric value between 0 and 255 inclusive indicating
-- the weight associated with this row.
-- Route addition resist (min)
-- Numeric value between 0 and 255 inclusive indicating
-- the minimum route addition resistance for this row.
-- Route addition resist (max)
-- Numeric value between 0 and 255 inclusive indicating
-- the maximum route addition resistance for this row.
-- Congestion (min)
-- Indicates whether this class of service for this row
-- will accept congestion. Yes or No must be specified.
-- Congestion (max)
-- Indicates whether this Class of Service for this row
-- will accept congestion. Yes or No must be specified.

-- COS TG Row table
-- At least one TG row must be specified with the defaults
-- COS tables specify 8 rows.
-- TG Row Weight
-- Numeric value between 0 and 255 inclusive indicating
-- the weight associated with this row.
-- Effective capacity (min)
-- Indicates the lowest acceptable value for this row.
-- Effective capacity (max)
-- Indicates the highest required value for this row.
-- Cost per connect time (min)
-- Indicates the lowest connect cost per unit time value
-- for this row. This value is between 0 and 255 inclusive.
-- Cost per connect time (max)
-- Indicates the highest connect cost per unit time value
-- for this row. This value is between 0 and 255 inclusive.
-- Cost per byte (min)
-- Indicates the lowest cost per byte value
-- for this row. This value is between 0 and 255 inclusive.
-- Cost per byte (max)
-- Indicates the highest cost per byte value
-- for this row. This value is between 0 and 255 inclusive.
-- Security (min)
-- Indicates the lowest acceptable value for security
-- for this row. This value is one of seven values.
-- Security (max)
-- Indicates the highest acceptable value for security
-- for this row. This value is one of seven values.
-- Propagation delay (min)
-- Indicates the lowest acceptable propagation delay value
-- for this row.
-- Propagation delay (max)
-- Indicates the highest acceptable propagation delay value
-- for this row.
-- User defined 1 (min)
-- Indicates the lowest acceptable value
-- for this row. This value is between 0 and 255 inclusive.
-- User defined 1 (max)
-- Indicates the highest acceptable value
-- for this row. This value is between 0 and 255 inclusive.
-- User defined 2 (min)
-- Same as user defined 1
-- User defined 2 (max)
-- Same as user defined 1
-- User defined 3 (min)
-- Same as user defined 1
-- User defined 3 (max)
-- Same as user defined 1

-- Due to SNMP ASN.1 limitations the COS table is defined
-- in the following format.
--
-- MODE name table
--   MODE Name (index)
--   COS Name
--
-- COS name table
--   COS Name (index)
--   Transmission priority
--
-- COS node row table
--   COS Name (index1)
--   Index2
--   Node Row Weight
--   Rte addition resist (min)
--   Rte addition resist (max)
--   Congestion (min)
--   Congestion (max)
--
-- COS TG row table
--   COS Name (index1)
--   Index
--   TG Row Weight
--   Effective capacity (min)
-- Effective capacity (max)
-- Cost per conn time (min)
-- Cost per conn time (max)
-- cost per byte (min)
-- cost per byte (max)
-- Security (min)
-- Security (max)
-- Propagation delay (min)
-- Propagation delay (max)
-- User defined 1 (min)
-- User defined 1 (max)
-- User defined 2 (min)
-- User defined 2 (max)
-- User defined 3 (min)
-- User defined 3 (max)
--
-- ********************************************

ibmappnCosModeTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnCosModeEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table representing all of the defined
mode names for this node. The table
contains the matching COS name."

::= { ibmappnCos 1 }

ibmappnCosModeEntry OBJECT-TYPE
SYNTAX IbmappnCosModeEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table is indexed by the Mode Name."
INDEX
{ibmappnCosModeName}
::= { ibmappnCosModeTable 1 }

IbmappnCosModeEntry ::= SEQUENCE {
  ibmappnCosModeName DisplayString,
  ibmappnCosModeCosName DisplayString
}

ibmappnCosModeName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this
mode entry."
::= { ibmappnCosModeEntry 1 }

ibmappnCosModeCosName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"An administratively assigned name for this
Class of Service."
::= { ibmappnCosModeEntry 2 }

-- ****************************

ibmappnCosNameTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnCosNameEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table representing all of the defined class-of-service
names for this node. The COS node and TG tables are
accessed using the same index, which is the COS name."
::= { ibmappnCos 2 }

ibmappnCosNameEntry OBJECT-TYPE
SYNTAX IbmappnCosNameEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The COS name is the index to this table."
INDEX
{ibmappnCosName}
::= { ibmappnCosNameTable 1 }

IbmappnCosNameEntry ::= SEQUENCE {
  ibmappnCosName DisplayString,
  ibmappnCosTransPriority INTEGER
}
ibmappnCosName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this class of service."
::= { ibmappnCosNameEntry 1 }

ibmappnCosTransPriority OBJECT-TYPE
SYNTAX INTEGER {
  low(1),               --X’01’
  medium(2),            --X’02’
  high(3),              --X’03’
  network(4)            --X’04’
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Transmission priority for this class of service. Values are:
  Low
  Medium
  High
  Network"
::= { ibmappnCosNameEntry 2 }

ibmappnCosNodeRowTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnCosNodeRowEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"This table contains all node-row information for all class of service in this node."
::= { ibmappnCos 3 }

ibmappnCosNodeRowEntry OBJECT-TYPE
SYNTAX IbmappnCosNodeRowEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The COS name is the first index and a integer is the second index to insure a unique index."

INDEX

{ibmappnCosNodeRowName, ibmappnCosNodeRowIndex}

::= {ibmappnCosNodeRowTable 1}

IbmappnCosNodeRowEntry ::= SEQUENCE {

  ibmappnCosNodeRowName                 DisplayString,
  ibmappnCosNodeRowIndex                INTEGER,

--Node Row Group

  ibmappnCosNodeRowWgt                  DisplayString,
  ibmappnCosNodeRowResistMin            INTEGER,
  ibmappnCosNodeRowResistMax            INTEGER,
  ibmappnCosNodeRowMinCongestAllow      INTEGER,
  ibmappnCosNodeRowMaxCongestAllow      INTEGER

}

ibmappnCosNodeRowName              OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Administratively-assigned name for this
class of service."

::= { ibmappnCosNodeRowEntry 1}

ibmappnCosNodeRowIndex     OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Index of COS name. This same value is used
to access the node and TG COS tables.
Range of values is 0-255."

::= { ibmappnCosNodeRowEntry 2}

--Node Row Group

ibmappnCosNodeRowWgt     OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
""
"Weight to be associated with the nodes
that fit the criteria specified by this node row."

::=  { ibmappnCosNodeRowEntry 3 }

ibmappnCosNodeRowResistMin OBJECT-TYPE
SYNTAX INTEGER   (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum route addition resistance value
for this node. Range of values is 0-255.
The lower the value, the more desirable
the node is for intermediate routing."

::=  { ibmappnCosNodeRowEntry 4 }

ibmappnCosNodeRowResistMax OBJECT-TYPE
SYNTAX INTEGER   (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum route addition resistance value
for this node. Range of values is 0-255.
The lower the value, the more desirable
the node is for intermediate routing."

::=  { ibmappnCosNodeRowEntry 5 }

ibmappnCosNodeRowMinCongestAllow OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether low congestion will be
tolerated. The minimum and maximum parameters
will allow specifying either low-congested,
high-congested, or either to be used."

::=  { ibmappnCosNodeRowEntry 6 }

ibmappnCosNodeRowMaxCongestAllow OBJECT-TYPE
SYNTAX INTEGER {yes(1), no(2)}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Indicates whether high congestion will be
tolerated. The minimum and maximum parameters
will allow specifying either low-congested, high-congested, or either to be used.

::= { ibmappnCosNodeRowEntry 7 }

-- COS TG row table
-- Index
-- TG Row Weight
-- Effective capacity  (min)
-- Effective capacity  (max)
-- Cost per conn time  (min)
-- Cost per conn time  (max)
-- cost per byte       (min)
-- cost per byte       (max)
-- Security            (min)
-- Security            (max)
-- Propagation delay   (min)
-- Propagation delay   (max)
-- User defined 1      (min)
-- User defined 1      (max)
-- User defined 2      (min)
-- User defined 2      (max)
-- User defined 3      (min)
-- User defined 3      (max)

ibmappnCosTgRowTable OBJECT-TYPE
SYNTAX SEQUENCE OF IbmappnCosTgRowEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"Table containing all the Tg-row information for all class of service defined in this node."

::= { ibmappnCos 4 }

ibmappnCosTgRowEntry OBJECT-TYPE
SYNTAX IbmappnCosTgRowEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
"The TgRowName and the TgRowIndex are the index for this table."

INDEX

{ibmappnCosTgRowName,
 ibmappnCosTgRowIndex}
::= { ibmappnCosTgRowTable 1 }

IbmappnCosTgRowEntry ::= SEQUENCE {
    ibmappnCosTgRowName               DisplayString,
    ibmappnCosTgRowIndex              INTEGER,
    ibmappnCosTgRowWgt                DisplayString,
    ibmappnCosTgRowEffCapMin          INTEGER,
    ibmappnCosTgRowEffCapMax          INTEGER,
    ibmappnCosTgRowConnCostMin        INTEGER,
    ibmappnCosTgRowConnCostMax        INTEGER,
    ibmappnCosTgRowByteCostMin        INTEGER,
    ibmappnCosTgRowByteCostMax        INTEGER,
    ibmappnCosTgRowSecurityMin        INTEGER,
    ibmappnCosTgRowSecurityMax        INTEGER,
    ibmappnCosTgRowDelayMin           INTEGER,
    ibmappnCosTgRowDelayMax           INTEGER,
    ibmappnCosTgRowUsr1Min            INTEGER,
    ibmappnCosTgRowUsr1Max            INTEGER,
    ibmappnCosTgRowUsr2Min            INTEGER,
    ibmappnCosTgRowUsr2Max            INTEGER,
    ibmappnCosTgRowUsr3Min            INTEGER,
    ibmappnCosTgRowUsr3Max            INTEGER
}

ibmappnCosTgRowName OBJECT-TYPE
SYNTAX DisplayString (SIZE (1..8))
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Administratively-assigned name for this
    class of service."
::= { ibmappnCosTgRowEntry 1 }

ibmappnCosTgRowIndex OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
    "Index of COS name.  This same value is used
to access the node and TG COS tables."
::= { ibmappnCosTgRowEntry 2 }

--TG Row

ibmappnCosTgRowWgt OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Weight to be associated with the nodes
that fit the criteria specified by this tg-row."

::=  { ibmappnCosTgRowEntry 3 }

ibmappnCosTgRowEffCapMin  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable speed for this Class of Service.
The effective capacity is an integer value that indicates
the actual kilo bits per second.
It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776."

::=  { ibmappnCosTgRowEntry 4 }

ibmappnCosTgRowEffCapMax  OBJECT-TYPE
SYNTAX INTEGER
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable speed for this Class of Service.
The effective capacity is an integer value that indicates
the actual kilo bits per second.
It is derived from the link bandwidth and maximum load
factor with the range of 0 thru 603,979,776."

::=  { ibmappnCosTgRowEntry 5 }

ibmappnCosTgRowConnCostMin OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable cost per connect time
for this Class of Service.
Cost per connect time: a value representing
the relative cost per unit of time to use
the TG. Range is from 0, which means no cost,
to 255."

::=  { ibmappnCosTgRowEntry 6 }

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ibmappnCosTgRowConnCostMax OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable cost per connect time for this Class of Service.
Cost per connect time: a value representing the relative cost per unit of time to use the TG. Range is from 0, which means no cost, to 255."

::=  { ibmappnCosTgRowEntry 7 }

ibmappnCosTgRowByteCostMin  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable cost per byte for this Class of Service."

::=  { ibmappnCosTgRowEntry 8 }

ibmappnCosTgRowByteCostMax  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable cost per byte for this Class of Service."

::=  { ibmappnCosTgRowEntry 9 }

ibmappnCosTgRowSecurityMin  OBJECT-TYPE
SYNTAX INTEGER {
  nonsecure(1), --X'01'
  publicSwitchedNetwork(32), --X'20'
  undergroundCable(64), --X'40'
  secureConduit(96), --X'60'
  guardedConduit(128), --X'80'
  encrypted(160), --X'A0'
  guardedRadiation(192) --X'C0'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable security
for this Class of Service.

::=  { ibmappnCosTgRowEntry 10 }

ibmappnCosTgRowSecurityMax  OBJECT-TYPE
SYNTAX INTEGER {
  nonsecure(1), --X'01'
  publicSwitchedNetwork(32), --X'20'
  undergroundCable(64), --X'40'
  secureConduit(96), --X'60'
  guardedConduit(128), --X'80'
  encrypted(160), --X'A0'
  guardedRadiation(192) --X'C0'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable security for this Class of Service."

::=  { ibmappnCosTgRowEntry 11 }

ibmappnCosTgRowDelayMin  OBJECT-TYPE
SYNTAX INTEGER {
  minimum(0), --X'00'
  negligible(384), --X'4C'
  terrestrial(9216), --X'71'
  packet(147456), --X'91'
  long(294912), --X'99'
  maximum(2013265920) --X'FF'
}
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable propagation delay for this class of service. Relative amount of time that it takes for a signal to travel the length of the logical link. This time is represented in micro seconds, with the more values enumerated."

::=  { ibmappnCosTgRowEntry 12 }

ibmappnCosTgRowDelayMax  OBJECT-TYPE
SYNTAX INTEGER {
  minimum(0), --X'00'
  negligible(384), --X'4C'
  terrestrial(9216), --X'71'
  packet(147456), --X'91'
  long(294912), --X'99'
maximum(2013265920)   --'FF'

ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable propagation delay for this class of service. Relative amount of time that it takes for a signal to travel the length of the logical link. This time is represented in micro seconds, with the more values enumerated."

::=  { ibmappnCosTgRowEntry 13 }

ibmappnCosTgRowUsr1Min  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable value for this user defined characteristic. Range of values is 0-255."

::=  { ibmappnCosTgRowEntry 14 }

ibmappnCosTgRowUsr1Max  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Maximum acceptable value for this user defined characteristic. Range of values is 0-255."

::=  { ibmappnCosTgRowEntry 15 }

ibmappnCosTgRowUsr2Min  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
"Minimum acceptable value for this user defined characteristic. Range of values is 0-255."

::=  { ibmappnCosTgRowEntry 16 }

ibmappnCosTgRowUsr2Max  OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "A Maximum acceptable value for this user defined characteristic."
::=  { ibmappnCosTgRowEntry 17 }

ibmappnCosTgRowUsr3Min OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "Minimum acceptable value for this user defined characteristic.
   Range of values is 0-255."
::=  { ibmappnCosTgRowEntry 18 }

ibmappnCosTgRowUsr3Max OBJECT-TYPE
SYNTAX INTEGER (0..255)
ACCESS read-only
STATUS mandatory
DESCRIPTION
   "Maximum acceptable value for this user defined characteristic.
   Range of values is 0-255."
::=  { ibmappnCosTgRowEntry 19 }

END

3.0 Acknowledgements

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4.0 Security Considerations

Security issues are not discussed in this memo.
5.0 Authors’ Addresses

William F. McKenzie  
IBM Networking Systems  
P. O. Box 12195  
Research Triangle Park, NC  27709  
US  

Phone: +1 919 254 5705  
EMail: mckenzie@ralvma.vnet.ibm.com

Jia-bing R. Cheng  
IBM Networking Systems  
P. O. Box 12195  
Research Triangle Park, NC  27709  
US  

Phone: +1 919 254 4434  
EMail: cheng@ralvm6.vnet.ibm.com