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Definitions of Managed Objects for SNA Data Link Control (SDLC) using SMiv2

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

This specification defines an extension to the Management Information Base (MIB) for use with SNMP-based network management. In particular, it defines objects for managing the configuration, monitoring and control of data link controls in an SNA environment. This draft identifies managed objects for SNA Synchronous Data Link Control (SDLC) links only.

Table of Contents

1.	The SNMPv2 Network Management Framework	2
1.1	Object Definitions	2
2.	Overview	2
2.1	Tables Defined in the SNADLC SDLC MIB	3
2.2	Row Creation Mechanism	3
2.3	Relationship to the Interfaces Group	4
3.	Definitions	7
3.1	Port Administrative Table	9
3.2	Port Operational Table	14
3.3	Port Statistics Table	20
3.4	Link Station Administrative Table	26
3.5	Link Station Operational Table	35
3.6	Link Station Statistics Table	44
3.7	Trap Definitions	56
3.8	Compliance Statements	57

4.	Acknowledgments	65
5.	References	65
6.	Glossary	66
7.	Security Considerations	67
8.	Authors' Addresses	67

1. The SNMPv2 Network Management Framework

The SNMPv2 Network Management Framework consists of four major components. They are:

- o RFC 1441 which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- o STD 17, RFC 1213 defines MIB-II, the core set of managed objects for the Internet suite of protocols.
- o RFC 1445 which defines the administrative and other architectural aspects of the framework.
- o RFC 1448 which defines the protocol used for network access to managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

1.1. Object Definitions

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to refer to the object type.

2. Overview

This memo identifies the proposed set of objects for configuring, monitoring, and controlling SDLC ports and link stations.

2.1. Tables Defined in the SNADLC SDLC MIB

The SNADLC MIB is composed of two managed entities with three tables each. The two managed entities for SDLC are:

- o Ports: the physical connection, and
- o Link Stations: the logical connections on the Port.

The three management tables are:

- o Administration: objects used for configuring and controlling the operation of a Port or Link Station,
- o Operational: objects that reflect the run-time state of the Port or Link Station, and
- o Statistics: objects that reflect the operating metrics of the Port or Link Station.

Considering the above combinations, the following are the actual tables found in this MIB:

- 1) Port Administration Table,
- 2) Port Operation Table,
- 3) Port Statistics Table,
- 4) Link Station Administration Table,
- 5) Link Station Operation Table,
- 6) Link Station Statistics Table.

All variables in this MIB relate to SDLC ports and link stations only. Any variable relating to higher-layer entities in SNA such as Physical Units (PU) and Logical Units (LU) are found in the SNA NAU MIB [4].

2.2. Row Creation Mechanism

Row creation mechanism for the `sdlcLSAdminTable` is based on the use of the `RowStatus` object. It follows the rules for the use in SNMPv1 context proposed in the memo "Row creation with SNMPv1" [5]. Before accepting the destroy value for an entry, an agent has to verify the operational state of the corresponding entry in the `sdlcLSOperTable` entry.

2.3. Relationship to the Interfaces Group

This memo shall conform to the recommendations of [6].

The SDLC layer of each SDLC Port shall be modeled by a row in the ifTable with an ifType using the IANA assigned number for SDLC (17). Each SDLC port interface must comply with the following conformance groups in [6]:

- ifGeneralGroup
- ifStackGroup
- ifPacketGroup

An implementation may optionally comply with the ifTestGroup defined in that memo to execute vendor specific tests. An example of this would be to perform LPDA test functions.

The SDLC port's relation with its physical, or lower-layer interface (i.e., RS-232, V.35, etc.) shall be modeled by a row in the ifStackTable with the ifStackHigherLayer pointing to the SDLC port ifTable instance and the ifStackLowerLayer pointing to the physical media-specific ifTable instance. The media-specific objects of these lower-layer interfaces will, of course, be described in their respective MIBs (i.e., [1]).

The following table provides specific implementation guidelines for all the interface group objects listed in the conformance tables above.

Object	Use for an SDLC Port
ifIndex	Each SDLC port is represented by an ifEntry. All SDLC port tables shall be indexed by ifIndex.
ifDescr	Description of the SDLC port.
ifType	The IANA value reserved for SDLC - 17.
ifMtu	Refer to [6].
ifSpeed	This object shall reflect the value of the corresponding object in the ifEntry of the associated lower-layer interface.
ifPhysAddress	A string denoting the physical location of the SDLC port within its node. This shall have unique significance within each implementing node.

ifAdminStatus	This object shall reflect the value of the corresponding object in the ifEntry of the associated lower-layer interface.
ifOperStatus	This object shall reflect the value of the corresponding object in the ifEntry of the associated lower-layer interface.
ifLastChange	Refer to [6].
ifInOctets	Refer to [6].
ifInUcastPkts	This object shall count packets received from a specific SDLC poll address. Packets for the SDLC broadcast address of x'FF' are not counted.
ifInDiscards	Refer to [6].
ifInErrors	Refer to [6]. Specific counters for these errors are kept in the sdlcPortStatsTable.
ifInUnknownProtos	This counter shall return zero for SDLC ports.
ifOutOctets	Refer to [6].
ifOutUcastPkts	This object shall count packets transmitted to a specific SDLC poll address (not x'FF').
ifOutDiscards	Refer to [6].
ifOutErrors	Refer to [6]. Specific counters for these errors are kept in the sdlcPortStatsTable.
ifName	The textual name of the SDLC port or an octet string of zero length.
ifInMulticastPkts	The value is 0 (not applicable to the SDLC layer).
ifInBroadcastPkts	This object shall count packets received on this interface addressed to the SDLC broadcast address (x'FF'). Only point-to-point ports supporting a secondary switched station should return non-zero values.
ifOutMulticastPkts	The value is 0 (not applicable to the SDLC layer).
ifOutBroadcastPkts	This object shall count packets transmitted on this interface which were addressed to the SDLC broadcast

address (x'FF'). Only point-to-point ports supporting a primary switched station should return non-zero values.

ifHC*	Not part of the conformance group.
ifLinkUpDownTrapEnable	Refer to [6]. Default is disabled (2).
ifHighSpeed	Refer to [6].
ifPromiscuousMode	Should return false if this interface receives only packets addressed to its SDLC poll address(es). However, in certain implementations, the lower-layer interface shall present all frames to the SDLC port regardless of the poll address. Such frames may be the result of a misconfigured peer or the secondary end of a multipoint connection. Such implementations should return true for this object.
ifConnectorPresent	Set to 'false'.
ifStackHigherLayer	For each SDLC port there will be an ifStackEntry with this object's value referring to the ifIndex of the SDLC port's ifEntry for the SDLC layer.
ifStackLowerLayer	For each SDLC port there will be an ifStackEntry with this object's value referring to the ifIndex of the physical layer interface's ifEntry for that SDLC port.
ifStackStatus	Refer to [6].

3. Definitions

```
SNA-SDLC-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    Counter32, Integer32, TimeTicks
        FROM SNMPv2-SMI
    DisplayString, RowStatus, TimeInterval
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    mib-2, ifIndex, ifAdminStatus, ifOperStatus
        FROM RFC1213-MIB;
```

```
snadLC MODULE-IDENTITY
```

```
    LAST-UPDATED   "9411150000Z"
    ORGANIZATION   "IETF SNA DLC MIB Working Group"
    CONTACT-INFO
```

```
        "          Wayne Clark
```

```
        Postal:   cisco Systems, Inc.
                  3100 Smoketree Ct.
                  Suite 1000
                  Raleigh, NC 27604
                  US
```

```
        Tel:      +1 919 878 6958
```

```
        E-Mail:   wclark@cisco.com"
```

```
DESCRIPTION
```

```
    "This is the MIB module for objects used to
    manage SDLC devices."
```

```
::= { mib-2 41 }
```

```
--
```

```
-- The following data link controls are modelled in this MIB module:
```

```
--
```

```
-- 1. SDLC
```

```
--
```

```
sdLC          OBJECT IDENTIFIER ::= { snadLC 1 }
```

```

--
-- THE SDLC GROUP
-- =====
--
-- The following resources are modelled in the SDLC group of this
-- MIB module:
--
--     1. PORTS
--     2. LINK STATIONS
--
sdlcPortGroup OBJECT IDENTIFIER ::= { sdlc 1 } -- Physical Ports
sdlcLSGroup   OBJECT IDENTIFIER ::= { sdlc 2 } -- Logical Link Stations
--
-- THE SDLC PORT GROUP
-- =====
--
-- The following classes of information is modelled for each SDLC port:
--
--     1. ADMINISTRATIVE ( read/write)
--     2. OPERATIONAL   ( read-only)
--     3. STATISTICS     ( read-only)
--
-- Information not found in this group is found in tables described in
-- the following RFCs:
--
--     1. RFC1213 - MIB-II
--
--           TABLE                               INDEX
--           =====                               =====
--           a.  ifTable                           ifIndex
--
--     2. RFC1659 - The RS232-like MIB
--
--           TABLE                               INDEX
--           =====                               =====
--           a.  rs232PortTable                     rs232PortIndex
--           b.  rs232SyncPortTable                  rs232SyncPortIndex
--           c.  rs232InSigTable                     rs232InSigPortIndex,
--                                                    rs232InSigName
--           d.  rs232OutSigTable                    rs232OutSigPortIndex,
--                                                    rs232OutSigName
--           ** e. rs232AsyncPortTable                rs232AsyncPortIndex
--
--           ** rs232AsyncPortTable for ISO 3309.3 ( Start-Stop SDLC ).

```



```
-- *****
-- *
-- *          THE SDLC PORT ADMINISTRATIVE TABLE          *
-- *
-- *****
```

```
sdlcPortAdminTable  OBJECT-TYPE
    SYNTAX      SEQUENCE OF SdlcPortAdminEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains objects that can be
        changed to manage an SDLC port.  Changing one
        of these parameters may take effect in the
        operating port immediately or may wait until
        the interface is restarted depending on the
        details of the implementation.

        Most of the objects in this read-write table
        have corresponding read-only objects in the
        sdlcPortOperTable that return the current
        operating value.

        The operating values may be different from
        these configured values if a configured
        parameter was changed after the interface was
        started."
    ::= { sdlcPortGroup 1 }
```

```
sdlcPortAdminEntry  OBJECT-TYPE
    SYNTAX      SdlcPortAdminEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A list of configured values for an SDLC port."
    INDEX      { ifIndex }
    ::= { sdlcPortAdminTable 1 }
```

```
SdlcPortAdminEntry ::= SEQUENCE
{
    sdlcPortAdminName      DisplayString,
    sdlcPortAdminRole      INTEGER,
    sdlcPortAdminType      INTEGER,
    sdlcPortAdminTopology  INTEGER,
    sdlcPortAdminISTATUS   INTEGER,
    sdlcPortAdminACTIVTO   TimeInterval,
    sdlcPortAdminPAUSE     TimeInterval,
    sdlcPortAdminSERVLIM   Integer32,
```

```

        sdlcPortAdminSlowPollTimer TimeInterval
    }

sdlcPortAdminName OBJECT-TYPE
    SYNTAX      DisplayString (SIZE (1..10))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "An octet string that defines the physical port
        to which this interface is assigned. It has
        implementation-specific significance. Its value
        shall be unique within the administered
        system. It must contain only ASCII printable
        characters. Should an implementation choose to
        accept a write operation for this object, it
        causes the logical port definition associated
        with the table instance to be moved to a
        different physical port. A write operation
        shall not take effect until the port is cycled
        inactive."
    ::= { sdlcPortAdminEntry 1 }

sdlcPortAdminRole OBJECT-TYPE
    SYNTAX      INTEGER
    {
        primary(1),
        secondary(2),
        negotiable(3)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "This object describes the role that the link
        station shall assume the next time a connection
        is established.

        Even though this is defined as a port object,
        it is a link station attribute in the sense
        that a role is per link station. However, it
        is not possible to vary link station roles on a
        particular port. For example, if an SDLC port
        is configured to primary, all link stations on
        that port must be primary."
    ::= { sdlcPortAdminEntry 2 }

sdlcPortAdminType OBJECT-TYPE
    SYNTAX      INTEGER
    {

```

```

        leased(1),
        switched(2)
    }
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION
    "This parameter defines whether the SDLC port
    is to connect to a leased or switched line.  A
    write operation to this administrative value
    shall not take effect until the SDLC port has
    been cycled inactive."
DEFVAL { leased }
 ::= { sdlcPortAdminEntry 3 }

```

```

sdlcPortAdminTopology OBJECT-TYPE
SYNTAX        INTEGER
{
    pointToPoint(1),
    multipoint(2)
}
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION
    "This parameter defines whether the SDLC port is
    capable of operating in either a point-to-point
    or multipoint topology.

    sdlcPortAdminTopology == multipoint implies the
    port can also operate in a point-to-point
    topology.  sdlcPortAdminTopology ==
    pointToPoint does not imply the port can
    operate in a multipoint topology.

    A write operation to this administrative value
    shall not take effect until the SDLC port has
    been cycled inactive."
DEFVAL { pointToPoint }
 ::= { sdlcPortAdminEntry 4 }

```

```

sdlcPortAdminISTATUS OBJECT-TYPE
SYNTAX        INTEGER
{
    inactive(1),
    active(2)
}
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION

```

"This parameter controls the initial value of the administrative status, ifAdminStatus, of this SDLC port at port start-up. Depending on the implementation, a write operation to this administrative object may not take effect until the SDLC port has been cycled inactive."

DEFVAL { active }
 ::= { sdlcPortAdminEntry 5 }

sdlcPortAdminACTIVTO OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This parameter defines the period of time (in 1/100ths of a second) that the port will allow a switched line to remain inactive before disconnecting. A switched line is considered to be inactive if there are no I-Frames being transferred. A value of zero indicates no timeout. Depending on the implementation, a write operation to this administered value may not take effect until the port is cycled inactive.

This object only has meaning for SDLC ports where sdlcPortAdminType == switched

The object descriptor contains the name of an NCP configuration parameter, ACTIVTO. Please note that the value of this object represents 1/100ths of a second while the NCP ACTIVTO is represented in seconds."

DEFVAL { 0 }
 ::= { sdlcPortAdminEntry 6 }

sdlcPortAdminPAUSE OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object defines the minimum elapsed time (in 1/100ths of a second) between any two traversals of the poll list for a primary SDLC port. Depending on the implementation, a write operation to this administered value may not take effect until the port is cycled inactive.

The object descriptor contains the name of an NCP configuration parameter, PAUSE. Please note that the value of this object represents 1/100ths of a second while the NCP PAUSE is represented in 1/10ths of a second.

This object only has meaning for SDLC ports where `sdlcPortAdminRole == primary` "

DEFVAL { 200 }
::= { sdlcPortAdminEntry 7 }

`sdlcPortAdminSERVLIM` OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"This object defines the number of times the active poll list will be traversed before polling a station on the slow poll list for a primary, multipoint SDLC port. Depending on the implementation, a write operation to this administered value may not take effect until the port is cycled inactive.

This object only has meaning for SDLC ports where

`sdlcPortAdminRole == primary`
and

`sdlcPortAdminTopology == multipoint` "
DEFVAL { 20 }
::= { sdlcPortAdminEntry 8 }

`sdlcPortAdminSlowPollTimer` OBJECT-TYPE

SYNTAX TimeInterval
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"This object describes the elapsed time (in 1/100ths of a second) between polls for failed secondary link station addresses. Depending on the implementation, a write operation to this administered value may not take effect until the port is cycled inactive.

This object only has meaning for SDLC ports where

`sdlcPortAdminRole == primary`
and

```

        sdlcPortAdminTopology == multipoint "
DEFVAL { 2000 }
 ::= { sdlcPortAdminEntry 9 }

-- *****
-- *
-- *          THE SDLC PORT OPERATIONAL TABLE          *
-- *
-- *****

sdlcPortOperTable  OBJECT-TYPE
    SYNTAX      SEQUENCE OF SdlcPortOperEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains current SDLC port
        parameters.  Many of these objects have
        corresponding objects in the sdlcPortAdminTable."
    ::= { sdlcPortGroup 2 }

sdlcPortOperEntry  OBJECT-TYPE
    SYNTAX      SdlcPortOperEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Currently set parameters for a specific SDLC
        port."
    INDEX       { ifIndex }
    ::= { sdlcPortOperTable 1 }

SdlcPortOperEntry ::= SEQUENCE
{
    sdlcPortOperName          DisplayString,
    sdlcPortOperRole          INTEGER,
    sdlcPortOperType          INTEGER,
    sdlcPortOperTopology      INTEGER,
    sdlcPortOperIStatus       INTEGER,
    sdlcPortOperACTIVTO       TimeInterval,
    sdlcPortOperPAUSE         TimeInterval,
    sdlcPortOperSlowPollMethod INTEGER,
    sdlcPortOperSERVLIM       Integer32,
    sdlcPortOperSlowPollTimer TimeInterval,
    sdlcPortOperLastModifyTime TimeTicks,
    sdlcPortOperLastFailTime  TimeTicks,
    sdlcPortOperLastFailCause INTEGER
}

sdlcPortOperName  OBJECT-TYPE

```

```

SYNTAX      DisplayString (SIZE (1..8))
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "An octet string that describes the physical
    port to which this interface is currently
    attached.  It has implementation-specific
    significance."
 ::= { sdlcPortOperEntry 1 }

```

```

sdlcPortOperRole OBJECT-TYPE
SYNTAX      INTEGER
{
    primary(1),
    secondary(2),
    undefined(3)
}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This object describes the role that the link
    station has assumed on this connection.

    Even though this is defined as a port object,
    it is a link station attribute in the sense
    that a role is per link station.  However, it
    is not possible to vary link station roles on a
    particular port.  For example, if an SDLC port
    is configured to primary, all link stations on
    that port must be primary.

    The value of sdlcPortOperRole is undefined(3)
    whenever the link station role has not yet been
    established by the mode setting command."
 ::= { sdlcPortOperEntry 2 }

```

```

sdlcPortOperType OBJECT-TYPE
SYNTAX      INTEGER
{
    leased(1),
    switched(2)
}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This parameter defines whether the SDLC port
    is currently operating as though connected to a
    leased or switched line."

```

```
 ::= { sdlcPortOperEntry 3 }
```

sdlcPortOperTopology OBJECT-TYPE

SYNTAX INTEGER

```
{
    pointToPoint(1),
    multipoint(2)
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This parameter defines whether the SDLC port is currently operating in a point-to-point or multipoint topology."

```
 ::= { sdlcPortOperEntry 4 }
```

sdlcPortOperISTATUS OBJECT-TYPE

SYNTAX INTEGER

```
{
    inactive(1),
    active(2)
}
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This parameter describes the initial value of the administrative status, ifAdminStatus, of this SDLC port at last port start-up."

```
 ::= { sdlcPortOperEntry 5 }
```

sdlcPortOperACTIVTO OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This parameter defines the period of time (in 100ths of a second) that the port will allow a switched line to remain inactive before disconnecting. A switched line is considered to be inactive if there are no I-Frames being transferred.

The object descriptor contains the name of an NCP configuration parameter, ACTIVTO. Please note that the value of this object represents 1/100ths of a second while the NCP ACTIVTO is represented in seconds.

A value of zero indicates no timeout."
 ::= { sdlcPortOperEntry 6 }

sdlcPortOperPAUSE OBJECT-TYPE
 SYNTAX TimeInterval
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object describes the current minimum elapsed time (in 1/100ths of a second) between any two traversals of the poll list for a primary SDLC port.

The object descriptor contains the name of an NCP configuration parameter, PAUSE. Please note that the value of this object represents 1/100ths of a second while the NCP PAUSE is represented in 1/10ths of a second.

This object only has meaning for SDLC ports where

sdlcPortAdminRole == primary "
 ::= { sdlcPortOperEntry 7 }

sdlcPortOperSlowPollMethod OBJECT-TYPE
 SYNTAX INTEGER
 {
 servlim(1),
 pollpause(2),
 other(3)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object defines the exact method that is in effect for periodically polling failed secondary link station addresses.

If sdlcPortOperSlowPollMethod == servlim, then sdlcPortOperSERVLIM defines the actual polling characteristics.

If sdlcPortOperSlowPollMethod == pollpause, then sdlcPortOperSlowPollTimer defines the actual polling characteristics.

If sdlcPortOperSlowPollMethod == other, then the polling characteristics are modeled in

vendor-specific objects.

This object only has meaning for SDLC ports where

```

    sdlcPortOperRole == primary
and
    sdlcPortOperTopology == multipoint "
::= { sdlcPortOperEntry 8 }

```

sdlcPortOperSERVLIM OBJECT-TYPE

```

SYNTAX      Integer32
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"This object describes the number of times the active poll list is currently being traversed before polling a station on the slow poll list for a primary, multipoint SDLC port.

This object only has meaning for SDLC ports where

```

    sdlcPortOperRole == primary
and
    sdlcPortOperTopology == multipoint "
::= { sdlcPortOperEntry 9 }

```

sdlcPortOperSlowPollTimer OBJECT-TYPE

```

SYNTAX      TimeInterval
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"This object describes the elapsed time (in 1/100ths of a second) between polls for failed secondary link station addresses.

This object only has meaning for SDLC ports where

```

    sdlcPortOperRole == primary
and
    sdlcPortOperTopology == multipoint "
::= { sdlcPortOperEntry 10 }

```

sdlcPortOperLastModifyTime OBJECT-TYPE

```

SYNTAX      TimeTicks
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"This object describes the value of sysUpTime

when this port definition was last modified.
 If the port has not been modified, then this
 value shall be zero."
 ::= { sdlcPortOperEntry 11 }

sdlcPortOperLastFailTime OBJECT-TYPE
 SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object describes the value of sysUpTime
 when this SDLC port last failed. If the port
 has not failed, then this value shall be zero."
 ::= { sdlcPortOperEntry 12 }

sdlcPortOperLastFailCause OBJECT-TYPE
 SYNTAX INTEGER
 {
 undefined(1),
 physical(2)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This enumerated object describes the cause of
 the last failure of this SDLC port. If the
 port has not failed, then this object has a
 value of undefined(1)."
 DEFVAL { undefined }
 ::= { sdlcPortOperEntry 13 }

```

-- *****
-- *
-- *          THE SDLC PORT STATISTICS TABLE
-- *
-- *****

sdlcPortStatsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SdlcPortStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry in this table contains statistics
         for a specific SDLC port."
    ::= { sdlcPortGroup 3 }

sdlcPortStatsEntry OBJECT-TYPE
    SYNTAX      SdlcPortStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A list of statistics for an SDLC port."
    INDEX      { ifIndex }
    ::= { sdlcPortStatsTable 1 }

SdlcPortStatsEntry ::= SEQUENCE
{
    sdlcPortStatsPhysicalFailures Counter32,
    sdlcPortStatsInvalidAddresses Counter32,
    sdlcPortStatsDwarfFrames      Counter32,
    sdlcPortStatsPollsIn          Counter32,
    sdlcPortStatsPollsOut         Counter32,
    sdlcPortStatsPollRspsIn       Counter32,
    sdlcPortStatsPollRspsOut      Counter32,
    sdlcPortStatsLocalBusies      Counter32,
    sdlcPortStatsRemoteBusies     Counter32,
    sdlcPortStatsIFramesIn        Counter32,
    sdlcPortStatsIFramesOut       Counter32,
    sdlcPortStatsOctetsIn         Counter32,
    sdlcPortStatsOctetsOut        Counter32,
    sdlcPortStatsProtocolErrs     Counter32,
    sdlcPortStatsActivityTOs      Counter32,
    sdlcPortStatsRNRLIMITs       Counter32,
    sdlcPortStatsRetriesExps      Counter32,
    sdlcPortStatsRetransmitsIn    Counter32,
    sdlcPortStatsRetransmitsOut   Counter32
}

sdlcPortStatsPhysicalFailures OBJECT-TYPE

```

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of times
this port has failed due to its physical media
since port startup. At port startup time,
this object must be initialized to zero."
::= { sdlcPortStatsEntry 1 }

sdlcPortStatsInvalidAddresses OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of
frames received by this port with invalid link
station addresses."
::= { sdlcPortStatsEntry 2 }

sdlcPortStatsDwarfFrames OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of
frames received by this port which were
delivered intact by the physical layer but were
too short to be legal.

Ignoring the frame check sequence (FCS), a
frame is considered to be too short if it
is less than 2 bytes for sdlcLSOperMODULO of
eight, or if it is less than 3 bytes for
sdlcLSOperMODULO of onetwentyeight."

::= { sdlcPortStatsEntry 3 }

sdlcPortStatsPollsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of polls
received by this port since the port was
created."

::= { sdlcPortStatsEntry 4 }

sdlcPortStatsPollsOut OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object reflects the total number of polls sent by this port since the port was created."

::= { sdlcPortStatsEntry 5 }

sdlcPortStatsPollRspsIn OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object reflects the total number of poll responses received by this port since the port was created."

::= { sdlcPortStatsEntry 6 }

sdlcPortStatsPollRspsOut OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object reflects the total number of poll responses sent by this port since the port was created."

::= { sdlcPortStatsEntry 7 }

sdlcPortStatsLocalBusies OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object reflects the total number of times that the local SDLC link stations on this port have entered a busy state (RNR). This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 8 }

sdlcPortStatsRemoteBusies OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object reflects the total number of times that the adjacent (i.e., remote) SDLC link stations on this port have entered a busy state (RNR). This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 9 }

sdlcPortStatsIFramesIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of I-Frames that have been received by SDLC link stations on this port. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 10 }

sdlcPortStatsIFramesOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of I-Frames that have been transmitted by SDLC link stations on this port. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 11 }

sdlcPortStatsOctetsIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total octets received from adjacent SDLC link stations on this port. This object covers the address, control, and information field of I-Frames only. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 12 }

sdlcPortStatsOctetsOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total octets transmitted to adjacent SDLC link stations on this port. This object covers the address, control, and information field of I-Frames only. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 13 }

sdlcPortStatsProtocolErrs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of times that the SDLC link stations on this port have deactivated the link as a result of having received a protocol violation from the adjacent link station. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 14 }

sdlcPortStatsActivityTOs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of times that the SDLC link stations on this port have deactivated the link as a result of no activity on the link. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 15 }

sdlcPortStatsRNRLIMITs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of times that the SDLC link stations on this port have deactivated the link as a result of its RNRLIMIT timer expiring. This object is initialized to zero when the port is created."

::= { sdlcPortStatsEntry 16 }

sdlcPortStatsRetriesExps OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current
DESCRIPTION
"This object reflects the total number of times that the SDLC link stations on this port have deactivated the link as a result of a retry sequence being exhausted. This object is initialized to zero when the port is created."
::= { sdlcPortStatsEntry 17 }

sdlcPortStatsRetransmitsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of I-Frames retransmitted by remote link stations for all SDLC link stations on this port. This object is initialized to zero when the port is created."
::= { sdlcPortStatsEntry 18 }

sdlcPortStatsRetransmitsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of I-Frames retransmitted by all local SDLC link stations on this port. This object is initialized to zero when the port is created."
::= { sdlcPortStatsEntry 19 }

```

--
-- THE SDLC LINK STATION GROUP
-- =====
--
-- The following classes of information is modelled for each SDLC link
-- station:
--
--     1.  ADMINISTRATIVE ( read-write)
--     2.  OPERATIONAL   ( read-only)
--     3.  STATISTICS    ( read-only)
--
-- *****
-- *
-- *      THE SDLC LINK STATION ADMINISTRATIVE TABLE
-- *
-- *****

sdlcLSAdminTable  OBJECT-TYPE
    SYNTAX      SEQUENCE OF SdlcLSAdminEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains objects that can be
        changed to manage an SDLC link station.
        Changing one of these parameters may take
        effect in the operating link immediately or may
        wait until the link is restarted depending on
        the details of the implementation.

        The entries in sdlcLSAdminTable can be created
        either by an agent or a management station. The
        management station can create an entry in
        sdlcLSAdminTable by setting the appropriate
        value in sdlcLSAdminRowStatus.

        Most of the objects in this read-create table
        have corresponding read-only objects in the
        sdlcLSOperTable that reflect the current
        operating value.

        The operating values may be different from
        these configured values if changed by XID
        negotiation or if a configured parameter was
        changed after the link was started."
    ::= { sdlcLSGroup 1 }

sdlcLSAdminEntry  OBJECT-TYPE

```

```

SYNTAX      SdlcLSAdminEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A list of configured values for an SDLC link
    station."
INDEX       { ifIndex, sdlcLSAddress }
 ::= { sdlcLSAdminTable 1 }

```

```

SdlcLSAdminEntry ::= SEQUENCE
{
    sdlcLSAddress          INTEGER,
    sdlcLSAdminName        DisplayString,
    sdlcLSAdminState       INTEGER,
    sdlcLSAdminISTATUS     INTEGER,
    sdlcLSAdminMAXDATASend Integer32,
    sdlcLSAdminMAXDATARcv Integer32,
    sdlcLSAdminREPLYTO     TimeInterval,
    sdlcLSAdminMAXIN       INTEGER,
    sdlcLSAdminMAXOUT      INTEGER,
    sdlcLSAdminMODULO      INTEGER,
    sdlcLSAdminRETRIESm    INTEGER,
    sdlcLSAdminRETRIESt    TimeInterval,
    sdlcLSAdminRETRIESn    Integer32,
    sdlcLSAdminRNRLIMIT    TimeInterval,
    sdlcLSAdminDATMODE     INTEGER,
    sdlcLSAdminGPoll       INTEGER,
    sdlcLSAdminSimRim      INTEGER,
    sdlcLSAdminXmitRcvCap  INTEGER,
    sdlcLSAdminRowStatus   RowStatus
}

```

```

sdlcLSAddress      OBJECT-TYPE
SYNTAX             INTEGER (1..255)
MAX-ACCESS         read-create
STATUS             current
DESCRIPTION
    "This value is the poll address of the
    secondary link station for this SDLC link.  It
    uniquely identifies the SDLC link station
    within a single SDLC port."
 ::= { sdlcLSAdminEntry 1 }

```

```

sdlcLSAdminName    OBJECT-TYPE
SYNTAX             DisplayString (SIZE (1..10))
MAX-ACCESS         read-create
STATUS             current
DESCRIPTION

```

"An octet string that defines the local name of the SDLC link station. This field may be sent in the XID3 control vector 0x0E, type 0xF7."
 ::= { sdlcLSAdminEntry 2 }

sdlcLSAdminState OBJECT-TYPE
 SYNTAX INTEGER
 {
 inactive(1),
 active(2)
 }
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object controls the desired state of the SDLC station. The managed system shall attempt to keep the operational state, sdlcLSOperState, consistent with this value."
 DEFVAL { active }
 ::= { sdlcLSAdminEntry 3 }

sdlcLSAdminISTATUS OBJECT-TYPE
 SYNTAX INTEGER
 {
 inactive(1),
 active(2)
 }
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This parameter controls the desired state, sdlcLSAdminState, of the SDLC link station at link station start-up."
 DEFVAL { active }
 ::= { sdlcLSAdminEntry 4 }

sdlcLSAdminMAXDATASend OBJECT-TYPE
 SYNTAX Integer32
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object contains the maximum PDU size that the local link station thinks it can send to the adjacent link station before having received any XID from the ALS. After the maximum PDU size that the ALS can receive is known (via XID exchange) that value is reflected in sdlcLSOperMAXDATASend and takes

precedence over this object.

This value includes the Transmission Header (TH) and the Request Header (RH)."
 ::= { sdlcLSAdminEntry 5 }

sdlcLSAdminMAXDATARcv OBJECT-TYPE

SYNTAX Integer32
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

"This object contains the maximum PDU size that the local link station can receive from the adjacent link station. This value is sent in the XID to the ALS.

This value includes the Transmission Header (TH) and the Request Header (RH)."
 ::= { sdlcLSAdminEntry 6 }

sdlcLSAdminREPLYTO OBJECT-TYPE

SYNTAX TimeInterval
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION

"This object controls the reply timeout (in 1/100ths of a second) for an SDLC link station. If the link station does not receive a response to a poll or message before the specified time expires then the appropriate error recovery shall be initiated.

The object descriptor contains the name of an NCP configuration parameter, REPLYTO. Please note that the value of this object represents 1/100ths of a second while the NCP REPLYTO is represented in 1/10ths of a second.

Depending on the implementation, a write operation to this administered value may not change the operational value, sdlcLSOperREPLYTO, until the link station is cycled inactive.

This object only has meaning for SDLC ports where sdlcPortAdminRole == primary "
 DEFVAL { 100 }
 ::= { sdlcLSAdminEntry 7 }

```

sdlcLSAdminMAXIN    OBJECT-TYPE
    SYNTAX            INTEGER (1..127)
    MAX-ACCESS        read-create
    STATUS            current
    DESCRIPTION
        "This object controls the maximum number of
        unacknowledged I-frames which an SDLC link
        station may receive.  This should range from 1
        to (sdlcLSAdminMODULO - 1).  This value is sent
        in the XID to the ALS.

        A write operation to this administered value
        will not change the operational value,
        sdlcLSOperMAXIN, until the link station is
        cycled inactive."
    DEFVAL { 7 }
    ::= { sdlcLSAdminEntry 8 }

sdlcLSAdminMAXOUT    OBJECT-TYPE
    SYNTAX            INTEGER (1..127)
    MAX-ACCESS        read-create
    STATUS            current
    DESCRIPTION
        "This object controls the maximum number of
        consecutive unacknowledged I-frames which an
        SDLC link station shall send without an
        acknowledgement.  This shall range from 1 to
        (sdlcLSAdminMODULO - 1).

        For link stations on switched SDLC lines,
        certain implementations may choose to override
        this administered value with the value
        received in the XID exchange.

        Depending on the implementation, a write
        operation to this administered value may not
        change the operational value,
        sdlcLSOperMAXOUT, until the link station is
        cycled inactive.

        An implementation can support only modulo 8,
        only modulo 128, or both."
    DEFVAL { 1 }
    ::= { sdlcLSAdminEntry 9 }

sdlcLSAdminMODULO    OBJECT-TYPE
    SYNTAX            INTEGER
    {

```

```

        eight(8),
        onetwentyeight(128)
    }
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This object controls the modulus for an SDLC
    link station. This modulus determines the size
    of the rotating acknowledgement window used the
    SDLC link station pair.

    A write operation to this administered value
    will not change the operational value,
    sdlcLSOperMODULO, until the link station is
    cycled inactive.

    An implementation can support only modulo 8,
    only modulo 128, or both."
DEFVAL { eight }
 ::= { sdlcLSAdminEntry 10 }

```

```

sdlcLSAdminRETRIESt OBJECT-TYPE
SYNTAX        INTEGER (0..128)
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
    "This object controls number of retries in a
    retry sequence for the local SDLC link
    station. A retry sequence is a series of
    retransmitted frames ( data or control) for
    which no positive acknowledgement is received.

    The number of times that the retry sequence is
    to be repeated is controlled by the object:
    sdlcLSAdminRETRIESt. The interval between retry
    sequences is controlled by the object:
    sdlcLSAdminRETRIESt.

    A value of zero indicates no retries. If the
    value of sdlcLSAdminRETRIESt is zero, then the
    values of sdlcLSAdminRETRIESt and
    sdlcLSAdminRETRIESt should also be zero.

    Depending on the implementation, a write
    operation to this administered value may not
    change the operational value,
    sdlcLSOperRETRIESt, until the link station is
    cycled inactive."

```

```
DEFVAL { 15 }
 ::= { sdlcLSAdminEntry 11 }
```

sdlcLSAdminRETRIESt OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls the interval (in 1/100ths of a second) between retry sequences for the local SDLC link station if multiple retry sequences are specified . A retry sequence is a series of retransmitted frames (data or control) for which no positive acknowledgement is received.

The number of repeated retries sequences is controlled by the object: sdlcLSAdminRETRIESt. The retries per sequence is controlled by the object: sdlcLSAdminRETRIEStm.

The object descriptor contains the name of an NCP configuration parameter, RETRIEST. Please note that the value of this object represents 1/100ths of a second while the NCP RETRIEST is represented in seconds.

Depending on the implementation, a write operation to this administered value may not change the operational value, sdlcLSOperRETRIESt, until the link station is cycled inactive."

```
DEFVAL { 0 }
 ::= { sdlcLSAdminEntry 12 }
```

sdlcLSAdminRETRIEStn OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls the number of times that a retry sequence is repeated for the local SDLC link station. A retry sequence is a series of retransmitted frames (data or control) for which no positive acknowledgement is received.

The interval between retry sequences is controlled by the object: sdlcLSAdminRETRIEStn.

The retries per sequence is controlled by the object: `sdlcLSAdminRETRIEsM`.

Depending on the implementation, a write operation to this administered value may not change the operational value, `sdlcLSOperRETRIEsN`, until the link station is cycled inactive."

```
DEFVAL { 0 }
 ::= { sdlcLSAdminEntry 13 }
```

`sdlcLSAdminRNRLIMIT` OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls the length of time (in 1/100ths of a second) that an SDLC link station will allow its adjacent link station to remain in a busy (RNR) state before declaring it inoperative.

A value of `sdlcLSAdminRNRLIMIT` == 0 means there is no limit.

The object descriptor contains the name of an NCP configuration parameter, `RNRLIMIT`. Please note that the value of this object represents 1/100ths of a second while the NCP `RNRLIMIT` is represented in minutes.

Depending on the implementation, a write operation to this administered value may not change the operational value, `sdlcLSOperRNRLIMIT`, until the link station is cycled inactive."

```
DEFVAL { 18000 }
 ::= { sdlcLSAdminEntry 14 }
```

`sdlcLSAdminDATMODE` OBJECT-TYPE

SYNTAX INTEGER

```
{
    half(1),
    full(2)
}
```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object controls whether communications mode with the adjacent link station is two-way-alternate (half) or two-way-simultaneous (full)."

A write operation to this administered value will not change the operational value, sdlcLSOperDATMODE, until the link station is cycled inactive."

DEFVAL { half }
 ::= { sdlcLSAdminEntry 15 }

sdlcLSAdminGPoll OBJECT-TYPE
 SYNTAX INTEGER (0..254)
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object describes the group poll address for this link station instance. If group poll is not in effect for this link station instance, the value for sdlcLSAdminGPoll should be zero.

Depending on the implementation, a write operation to this administered value may not change the operational value, sdlcLSOperGPoll, until the link station is cycled inactive."

::= { sdlcLSAdminEntry 16 }

sdlcLSAdminSimRim OBJECT-TYPE
 SYNTAX INTEGER
 {
 no(1),
 yes(2)
 }
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "This object controls the support for transmission and receipt of SIM and RIM control frames for this link station. The value of this object controls the setting of the transmit-receive capability sent in the XID field."
 DEFVAL { no }
 ::= { sdlcLSAdminEntry 17 }

sdlcLSAdminXmitRcvCap OBJECT-TYPE

```

SYNTAX          INTEGER
{
    twa(1),
    tws(2)
}
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This object controls the transmit-receive
    capabilities for this SDLC link station.  The
    value of this object establishes the value of
    the transmit-receive capability indicator sent
    in the XID image to the adjacent link station."
DEFVAL { twa }
::= { sdlcLSAdminEntry 18 }

```

sdlcLSAdminRowStatus OBJECT-TYPE

```

SYNTAX          RowStatus
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This object is used by a management station to
    create or delete the row entry in
    sdlcLSAdminTable following the RowStatus
    textual convention.

    Upon successful creation of the row, an agent
    automatically creates a corresponding entry in
    the sdlcLSOperTable with sdlcLSOperState equal
    to 'discontacted (1)'."
::= { sdlcLSAdminEntry 19 }

```

```

-- *****
-- *
-- *          THE SDLC LINK STATION OPERATIONAL TABLE          *
-- *
-- *****

```

sdlcLSOperTable

```

OBJECT-TYPE
SYNTAX          SEQUENCE OF SdlcLSOperEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "This table contains current SDLC link
    parameters.  Many of these objects have
    corresponding objects in the
    sdlcLSAdminTable."
::= { sdlcLSGroup 2 }

```

```

sdlcLSOperEntry      OBJECT-TYPE
    SYNTAX              SdlcLSOperEntry
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        "A list of status and control values for an
        SDLC link station."
    INDEX               { ifIndex, sdlcLSAddress }
    ::= { sdlcLSOperTable 1 }

SdlcLSOperEntry      ::= SEQUENCE
{
    sdlcLSOperName          DisplayString,
    sdlcLSOperRole          INTEGER,
    sdlcLSOperState         INTEGER,
    sdlcLSOperMAXDATASend   Integer32,
    sdlcLSOperREPLYTO       TimeInterval,
    sdlcLSOperMAXIN         INTEGER,
    sdlcLSOperMAXOUT        INTEGER,
    sdlcLSOperMODULO        INTEGER,
    sdlcLSOperRETRIESm      INTEGER,
    sdlcLSOperRETRIESn      TimeInterval,
    sdlcLSOperRETRIESn      INTEGER,
    sdlcLSOperRNRLIMIT      TimeInterval,
    sdlcLSOperDATMODE       INTEGER,
    sdlcLSOperLastModifyTime TimeTicks,
    sdlcLSOperLastFailTime  TimeTicks,
    sdlcLSOperLastFailCause INTEGER,
    sdlcLSOperLastFailCtrlIn OCTET STRING,
    sdlcLSOperLastFailCtrlOut OCTET STRING,
    sdlcLSOperLastFailFRMRInfo OCTET STRING,
    sdlcLSOperLastFailREPLYTOs Counter32,
    sdlcLSOperEcho          INTEGER,
    sdlcLSOperGPoll         INTEGER,
    sdlcLSOperSimRim        INTEGER,
    sdlcLSOperXmitRcvCap    INTEGER
}

sdlcLSOperName      OBJECT-TYPE
    SYNTAX              DisplayString (SIZE (1..10))
    MAX-ACCESS          read-only
    STATUS              current
    DESCRIPTION
        "An octet string that defines the name of the
        remote SDLC link station.  This field is
        received in the XID3 control vector 0x0E, type
        0xF7."
    ::= { sdlcLSOperEntry 1 }

```

```

sdlcLSOperRole      OBJECT-TYPE
SYNTAX              INTEGER
{
    primary(1),
    secondary(2),
    undefined(3)
}
MAX-ACCESS          read-only
STATUS              current
DESCRIPTION
    "This object reflects the current role that the
    link station is assuming.

    The value of sdlcLSOperRole is undefined(3)
    whenever the link station role has not yet been
    established by the mode setting command."
 ::= { sdlcLSOperEntry 2 }

sdlcLSOperState      OBJECT-TYPE
SYNTAX              INTEGER
{
    disconnected(1),
    contactPending(2),
    contacted(3),
    disconnectPending(4)
}
MAX-ACCESS          read-only
STATUS              current
DESCRIPTION
    "This object describes the operational state of
    the SDLC link station. The managed system
    shall attempt to keep this value consistent
    with the administered state, sdlcLSAdminState"
 ::= { sdlcLSOperEntry 3 }

sdlcLSOperMAXDATASend OBJECT-TYPE
SYNTAX              Integer32
MAX-ACCESS          read-only
STATUS              current
DESCRIPTION
    "This object contains the actual maximum PDU
    size that the local link station can send to
    the adjacent link station. This object is
    established from the value received in the XID
    from the adjacent link station. If no XID
    is received, then this value is implementation
    dependent (for instance, it could be the value
    of sdlcLSAdminMAXDATASend)."

```

This value includes the Transmission Header (TH) and the Request Header (RH)."
 ::= { sdlcLSOperEntry 4 }

sdlcLSOperREPLYTO OBJECT-TYPE
 SYNTAX TimeInterval
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the current reply timeout (in 1/100ths of a second) for an SDLC link station. If the link station does not receive a response to a poll or message before the specified time expires then the appropriate error recovery shall be initiated.

The object descriptor contains the name of an NCP configuration parameter, REPLYTO. Please note that the value of this object represents 1/100ths of a second while the NCP REPLYTO is represented in 1/10ths of a second.

This object only has meaning for SDLC ports where sdlcPortOperRole == primary "
 ::= { sdlcLSOperEntry 5 }

sdlcLSOperMAXIN OBJECT-TYPE
 SYNTAX INTEGER (1..127)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the current maximum number of unacknowledged I-frames which an SDLC link station may receive. This shall range from 1 to (sdlcLSOperMODULO - 1)."
 ::= { sdlcLSOperEntry 6 }

sdlcLSOperMAXOUT OBJECT-TYPE
 SYNTAX INTEGER (1..127)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object controls the maximum number of consecutive unacknowledged I-frames which an SDLC link station shall send without an acknowledgement. This shall range from 1 to (sdlcLSAdminMODULO - 1).

This value may controlled by the administered MAXOUT, sdlcLSAdminMAXOUT, or by the MAXIN value received during the XID exchange."
 ::= { sdlcLSOperEntry 7 }

sdlcLSOperMODULO OBJECT-TYPE
 SYNTAX INTEGER
 {
 eight(8),
 onetwentyeight(128)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the current modulus for an SDLC link station. This modulus determines the size of rotating acknowledgement window used by the SDLC link station pair."
 DEFVAL { eight }
 ::= { sdlcLSOperEntry 8 }

sdlcLSOperRETRIESm OBJECT-TYPE
 SYNTAX INTEGER (0..128)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object controls number of retries in a retry sequence for an SDLC link station. A retry sequence is a series of retransmitted frames (data or control) for which no positive acknowledgement is received.

 The current number of times that the retry sequence is to be repeated is reflected by the object: sdlcLSOperRETRIESn. The current interval between retry sequences is reflected by the object: sdlcLSOperRETRIESt."
 ::= { sdlcLSOperEntry 9 }

sdlcLSOperRETRIESt OBJECT-TYPE
 SYNTAX TimeInterval
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the current interval (in 1/100ths of a second) between retry sequences for an SDLC link station if multiple retry sequences are specified. A retry sequence is a

series of retransmitted frames (data or control) for which no positive acknowledgement is received.

The object descriptor contains the name of an NCP configuration parameter, RETRIEST. Please note that the value of this object represents 1/100ths of a second while the NCP RETRIEST is represented in seconds.

The current number of repeated retries sequences is reflected by the object: sdlcLSOperRETRIESn. The current retries per sequence is reflected by the object: sdlcLSOperRETRIESm."

::= { sdlcLSOperEntry 10 }

sdlcLSOperRETRIESn OBJECT-TYPE

SYNTAX INTEGER (0..127)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the current number of times that a retry sequence is repeated for an SDLC link station. A retry sequence is a series of retransmitted frames (data or control) for which no positive acknowledgement is received.

The current interval between retry sequences is reflected by the object: sdlcLSOperRETRIESn.

The current retries per sequence is reflected by the object: sdlcLSOperRETRIESm."

::= { sdlcLSOperEntry 11 }

sdlcLSOperRNRLIMIT OBJECT-TYPE

SYNTAX TimeInterval

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the current length of time (in 1/100ths of a second) that an SDLC link station will allow its adjacent link station to remain in a busy (RNR) state before declaring it inoperative.

The object descriptor contains the name of an NCP configuration parameter, RNRLIMIT. Please

note that the value of this object represents 1/100ths of a second while the NCP RNRLIMIT is represented in minutes.

A value of sdlcLSOperRNRLIMIT == 0 means there is no limit."

::= { sdlcLSOperEntry 12 }

sdlcLSOperDATMODE OBJECT-TYPE
 SYNTAX INTEGER
 {
 half(1),
 full(2)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects whether the current
 communications mode with the adjacent link
 station is two-way-alternate (half) or
 two-way-simultaneous (full)."
 ::= { sdlcLSOperEntry 13 }

sdlcLSOperLastModifyTime OBJECT-TYPE
 SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object describes the value of sysUpTime
 when this link station definition was last
 modified. If the link station has not been
 modified, then this value shall be zero."
 ::= { sdlcLSOperEntry 14 }

sdlcLSOperLastFailTime OBJECT-TYPE
 SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object describes the value of sysUpTime
 when this SDLC link station last failed. If
 the link station has not failed, then this
 value shall be zero."
 ::= { sdlcLSOperEntry 15 }

sdlcLSOperLastFailCause OBJECT-TYPE
 SYNTAX INTEGER
 {

```

        undefined(1),
        rxFRMR(2),
        txFRMR(3),
        noResponse(4),
        protocolErr(5),
        noActivity(6),
        rnrLimit(7),
        retriesExpired(8)
    }
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "This enumerated object reflects the cause of
        the last failure of this SDLC link station.  If
        the link station has not failed, then this
        object will have a value of undefined(1)."
```

DEFVAL { undefined }

::= { sdlcLSOperEntry 16 }

sdlcLSOperLastFailCtrlIn OBJECT-TYPE

```

    SYNTAX        OCTET STRING (SIZE(1..2))
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "This object reflects the last control octet or
        octets (depending on modulus) received by this
        SDLC link station at the time of the last
        failure.  If the link station has not failed,
        then this value has no meaning."
```

::= { sdlcLSOperEntry 17 }

sdlcLSOperLastFailCtrlOut OBJECT-TYPE

```

    SYNTAX        OCTET STRING (SIZE(1..2))
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "This object reflects the last control octet or
        octets (depending on modulus) sent by this SDLC
        link station at the time of the last failure.
        If the link station has not failed, then this
        value has no meaning."
```

::= { sdlcLSOperEntry 18 }

sdlcLSOperLastFailFRMRInfo OBJECT-TYPE

```

    SYNTAX        OCTET STRING (SIZE(3))
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
```

"This object reflects the information field of the FRMR frame if the last failure for this SDLC link station was as a result of an invalid frame. Otherwise, this field has no meaning."
 ::= { sdlcLSOperEntry 19 }

sdlcLSOperLastFailREPLYTOs OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the number of times that the REPLYTO timer had expired for an SDLC link station at the time of the last failure. If the link station has not failed, then this value has no meaning."
 ::= { sdlcLSOperEntry 20 }

sdlcLSOperEcho OBJECT-TYPE
 SYNTAX INTEGER
 {
 no(1),
 yes(2)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object identifies whether the echo bit is in effect for this particular link station."
 DEFVAL { no }
 ::= { sdlcLSOperEntry 21 }

sdlcLSOperGPoll OBJECT-TYPE
 SYNTAX INTEGER (0..254)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object describes the group poll address in effect for this link station instance."
 DEFVAL { 0 }
 ::= { sdlcLSOperEntry 22 }

sdlcLSOperSimRim OBJECT-TYPE
 SYNTAX INTEGER
 {
 no(1),
 yes(2)
 }

```

MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This object reflects the support for
    transmission and receipt of SIM and RIM control
    frames for the adjacent link station.  The
    value of this object is set from the XID field
    received from the adjacent link station."
DEFVAL { no }
::= { sdlcLSOperEntry 23 }

```

```

sdlcLSOperXmitRcvCap OBJECT-TYPE
    SYNTAX      INTEGER
    {
        twa(1),
        tws(2)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object reflects the transmit-receive
        capabilities for the adjacent SDLC link
        station.  The value of this object is the value
        of the transmit-receive capability indicator
        received in the XID image from the adjacent
        link station."
    DEFVAL { twa }
    ::= { sdlcLSOperEntry 24 }

```

```

-- *****
-- *
-- *          THE SDLC LINK STATION STATISTICS TABLE          *
-- *
-- *****

```

```

sdlcLSStatsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SdlcLSStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each entry in this table contains statistics
        for a specific SDLC link station."
    ::= { sdlcLSGroup 3 }

```

```

sdlcLSStatsEntry OBJECT-TYPE
    SYNTAX      SdlcLSStatsEntry
    MAX-ACCESS  not-accessible

```

```

STATUS      current
DESCRIPTION
    "A list of statistics for an SDLC link station."
INDEX       { ifIndex, sdlcLSAddress }
 ::= { sdlcLSStatsTable 1 }

```

```
SdlcLSStatsEntry ::= SEQUENCE
```

```

{
    sdlcLSStatsBLUsIn          Counter32,
    sdlcLSStatsBLUsOut        Counter32,
    sdlcLSStatsOctetsIn       Counter32,
    sdlcLSStatsOctetsOut      Counter32,
    sdlcLSStatsPollsIn        Counter32,
    sdlcLSStatsPollsOut       Counter32,
    sdlcLSStatsPollRspIn      Counter32,
    sdlcLSStatsPollRspOut     Counter32,
    sdlcLSStatsLocalBusies    Counter32,
    sdlcLSStatsRemoteBusies   Counter32,
    sdlcLSStatsIFramesIn      Counter32,
    sdlcLSStatsIFramesOut     Counter32,
    sdlcLSStatsUIFramesIn     Counter32,
    sdlcLSStatsUIFramesOut    Counter32,
    sdlcLSStatsXIDsIn         Counter32,
    sdlcLSStatsXIDsOut        Counter32,
    sdlcLSStatsTESTsIn        Counter32,
    sdlcLSStatsTESTsOut       Counter32,
    sdlcLSStatsREJIn          Counter32,
    sdlcLSStatsREJOut         Counter32,
    sdlcLSStatsFRMRsIn        Counter32,
    sdlcLSStatsFRMRsOut       Counter32,
    sdlcLSStatsSIMsIn         Counter32,
    sdlcLSStatsSIMsOut        Counter32,
    sdlcLSStatsRIMsIn         Counter32,
    sdlcLSStatsRIMsOut        Counter32,
    sdlcLSStatsDISCIn         Counter32,
    sdlcLSStatsDISCOut        Counter32,
    sdlcLSStatsUAIIn          Counter32,
    sdlcLSStatsUAOut          Counter32,
    sdlcLSStatsDMIn           Counter32,
    sdlcLSStatsDMOut          Counter32,
    sdlcLSStatsSNRMIn         Counter32,
    sdlcLSStatsSNRMOut        Counter32,
    sdlcLSStatsProtocolErrs   Counter32,
    sdlcLSStatsActivityTOs     Counter32,
    sdlcLSStatsRNRLIMITs      Counter32,
    sdlcLSStatsRetriesExps     Counter32,
    sdlcLSStatsRetransmitsIn   Counter32,
    sdlcLSStatsRetransmitsOut Counter32
}

```

}

```

sdlcLSStatsBLUsIn  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total basic link
        units (BLUs; frames) received from an adjacent
        SDLC link station since link station startup.
        At link station startup time, this object must
        be initialized to zero."
    ::= { sdlcLSStatsEntry 1 }

sdlcLSStatsBLUsOut  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total basic link
        units (BLUs; frames), transmitted to an
        adjacent SDLC link station since link station
        startup.  At link station startup time, this
        object must be initialized to zero."
    ::= { sdlcLSStatsEntry 2 }

sdlcLSStatsOctetsIn OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total octets received
        from an adjacent SDLC link station since link
        station startup.  This object covers the
        address, control, and information field of
        I-Frames only.  At link station startup time,
        this object must be initialized to zero."
    ::= { sdlcLSStatsEntry 3 }

sdlcLSStatsOctetsOut OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total octets
        transmitted to an adjacent SDLC link station
        since link station startup.  This object covers
        the address, control, and information field of

```

I-Frames only. At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 4 }

sdlcLSStatsPollsIn OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total polls received from an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 5 }

sdlcLSStatsPollsOut OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total polls sent to an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 6 }

sdlcLSStatsPollRspsOut OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of poll responses sent to the adjacent SDLC link station since link station startup. This value includes I-frames that are sent in response to a poll.

 At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 7 }

sdlcLSStatsPollRspsIn OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of poll responses received from the adjacent SDLC link

station since station startup. This value includes I-frames that are received in response to a poll.

At link station startup time, this object must be initialized to zero."

::= { sdlcLSStatsEntry 8 }

sdlcLSStatsLocalBusies OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of times that the local SDLC link station has entered a busy state (RNR) since link station startup. At link station startup time, this object must be initialized to zero."

::= { sdlcLSStatsEntry 9 }

sdlcLSStatsRemoteBusies OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of times that an adjacent (remote) SDLC link station has entered a busy state (RNR) since link station startup. At link station startup time, this object must be initialized to zero."

::= { sdlcLSStatsEntry 10 }

sdlcLSStatsIFramesIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total I-frames received from an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."

::= { sdlcLSStatsEntry 11 }

sdlcLSStatsIFramesOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total I-frames transmitted to an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."

::= { sdlcLSStatsEntry 12 }

sdlcLSStatsUIFramesIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total UI-frames received from an adjacent SDLC link station since link station startup."

::= { sdlcLSStatsEntry 13 }

sdlcLSStatsUIFramesOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total UI-frames transmitted to an adjacent SDLC link station since link station startup."

::= { sdlcLSStatsEntry 14 }

sdlcLSStatsXIDsIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total XID frames received from an adjacent SDLC link station since link station startup."

::= { sdlcLSStatsEntry 15 }

sdlcLSStatsXIDsOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total XID frames transmitted to an adjacent SDLC link station since link station startup."

::= { sdlcLSStatsEntry 16 }

```
sdLcLSStatsTESTsIn  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total TEST frames,
        commands or responses, received from an
        adjacent SDLC link station since link station
        startup."
    ::= { sdLcLSStatsEntry 17 }

sdLcLSStatsTESTsOut  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total TEST frames,
        commands or responses, transmitted to an
        adjacent SDLC link station since link station
        startup."
    ::= { sdLcLSStatsEntry 18 }

sdLcLSStatsREJsIn    OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total REJ frames
        received from an adjacent SDLC link station
        since link station startup."
    ::= { sdLcLSStatsEntry 19 }

sdLcLSStatsREJsOut   OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total REJ frames
        transmitted to an adjacent SDLC link station
        since link station startup."
    ::= { sdLcLSStatsEntry 20 }

sdLcLSStatsFRMRsIn   OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total frame reject
```

(FRMR) frames received from an adjacent SDLC link station since link station startup."
 ::= { sdlcLSStatsEntry 21 }

sdlcLSStatsFRMRsOut OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total frame reject (FRMR) frames transmitted to an adjacent SDLC link station since link station startup."
 ::= { sdlcLSStatsEntry 22 }

sdlcLSStatsSIMsIn OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total set initialization mode (SIM) frames received from an adjacent SDLC link station since link station startup."
 ::= { sdlcLSStatsEntry 23 }

sdlcLSStatsSIMsOut OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total set initialization mode (SIM) frames transmitted to an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 24 }

sdlcLSStatsRIMsIn OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total request initialization mode (RIM) frames received from an adjacent SDLC link station since link station startup. At link station startup time, this object must be initialized to zero."
 ::= { sdlcLSStatsEntry 25 }

sdlcLSStatsRIMsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total request
initialization mode (RIM) frames transmitted to
an adjacent SDLC link station since link station
startup. At link station startup time, this
object must be initialized to zero."
::= { sdlcLSStatsEntry 26 }

sdlcLSStatsDISCIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of
disconnect (DISC) requests received from an
adjacent SDLC link station since link station
startup. At link station startup time, this
object must be initialized to zero."
::= { sdlcLSStatsEntry 27 }

sdlcLSStatsDISCOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of
disconnect (DISC) requests transmitted to an
adjacent SDLC link station since link station
startup. At link station startup time, this
object must be initialized to zero."
::= { sdlcLSStatsEntry 28 }

sdlcLSStatsUAIIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object reflects the total number of
unnumbered acknowledgements (UA) requests
received from an adjacent SDLC link station
since link station startup. At link station
startup time, this object must be initialized
to zero."
::= { sdlcLSStatsEntry 29 }

`sdlcLSStatsUAOut` OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of
 unnumbered acknowledgements (UA) requests
 transmitted to an adjacent SDLC link station
 since link station startup. At link station
 startup time, this object must be initialized
 to zero."
 ::= { sdlcLSStatsEntry 30 }

`sdlcLSStatsDMin` OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of
 disconnect mode (DM) requests received from an
 adjacent SDLC link station since link station
 startup. At link station startup time, this
 object must be initialized to zero."
 ::= { sdlcLSStatsEntry 31 }

`sdlcLSStatsDMOut` OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of
 disconnect mode (DM) requests transmitted to an
 adjacent SDLC link station since link station
 startup. At link station startup time, this
 object must be initialized to zero."
 ::= { sdlcLSStatsEntry 32 }

`sdlcLSStatsSNRMin` OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "This object reflects the total number of
 set normal response mode (SNRM/SNRME) requests
 received from an adjacent SDLC link station
 since link station startup. At link station
 startup time, this object must be initialized
 to zero."

```
::= { sdlcLSStatsEntry 33 }
```

```
sdlcLSStatsSNRMOut OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total number of
        set normal response mode (SNRM/SNRME) requests
        transmitted to an adjacent SDLC link station
        since link station startup. At link station
        startup time, this object must be initialized
        to zero."
```

```
::= { sdlcLSStatsEntry 34 }
```

```
sdlcLSStatsProtocolErrs OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total occurrences,
        since link station startup, where this SDLC
        link station has inactivated the link as a
        result of receiving a frame from its adjacent
        link station which was in violation of the
        protocol. At link station startup time, this
        object must be initialized to zero."
```

```
::= { sdlcLSStatsEntry 35 }
```

```
sdlcLSStatsActivityTOs OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total occurrences,
        since startup, where this SDLC link station has
        inactivated the link as a result of no activity
        on the link. At link station startup time,
        this object must be initialized to zero."
```

```
::= { sdlcLSStatsEntry 36 }
```

```
sdlcLSStatsRNRLIMITs OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object reflects the total occurrences,
        since startup, where this SDLC link station has
```

inactivated the link as a result of its
RNRLIMIT timer expiring. At link station
startup time, this object must be initialized
to zero."

::= { sdlcLSStatsEntry 37 }

sdlcLSStatsRetriesExps OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total occurrences,
since startup, where this SDLC link station has
inactivated the link as a result of a retry
sequence being exhausted. At link station
startup time, this object must be initialized
to zero."

::= { sdlcLSStatsEntry 38 }

sdlcLSStatsRetransmitsIn OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of
information frames retransmitted by the remote
link station because the N(s) received from
that link station indicated that one or more
information frames sent by that station were
lost. This event causes the first missing
information frame of a window and all
subsequent information frames to be
retransmitted. At link station startup time,
this object must be initialized to zero.

Management: If the value of
sdlcLSStatsRetransmitsIn grows over time, then
the quality of the serial line is in
question. You might want to look at
decreasing the value for
sdlcLSAdminMAXDATASend to compensate for the
lower quality line."

::= { sdlcLSStatsEntry 39 }

sdlcLSStatsRetransmitsOut OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object reflects the total number of information frames retransmitted to a remote link station because the N(r) received from that link station indicated that one or more information frames sent to that station were lost. This event causes the first missing information frame of a window and all subsequent information frames to be retransmitted. At link station startup time, this object must be initialized to zero.

Management: If the value of `sdclSStatsRetransmitsOut` grows over time, then the quality of the serial line is in question. You might want to look at decreasing the value for `sdclSAdminMAXDATASend` to compensate for the lower quality line."

::= { `sdclSStatsEntry` 40 }

--

-- TRAP DEFINITIONS

--

--

-- Notifications

--

`sdclTraps` OBJECT IDENTIFIER ::= { `sdcl` 3 }

`sdclPortStatusChange` NOTIFICATION-TYPE

OBJECTS { `ifIndex`,
 `ifAdminStatus`,
 `ifOperStatus`,
 `sdclPortOperLastFailTime`,
 `sdclPortOperLastFailCause`
 }

STATUS current

DESCRIPTION

"This trap indicates that the state of an SDLC port has transitioned to active or inactive."

::= { `sdclTraps` 1 }

`sdclLSStatusChange` NOTIFICATION-TYPE

OBJECTS { `ifIndex`,
 `sdclLSAddress`,
 `sdclLSOperState`,
 `sdclLSAdminState`,


```

        sdlcLSOperLastFailTime,
        sdlcLSOperLastFailCause,
        sdlcLSOperLastFailFRMRInfo,
        sdlcLSOperLastFailCtrlIn,
        sdlcLSOperLastFailCtrlOut,
        sdlcLSOperLastFailREPLYTOs
    }
STATUS    current
DESCRIPTION
    "This trap indicates that the state of an SDLC
    link station has transitioned to contacted or
    disconnected."
 ::= { sdlcTraps 2 }

--
-- Conformance Information
--

sdlcConformance OBJECT IDENTIFIER ::= { sdlc 4 }

sdlcCompliances  OBJECT IDENTIFIER ::= { sdlcConformance 1 }
sdlcGroups       OBJECT IDENTIFIER ::= { sdlcConformance 2 }

--
-- Compliance Statements
--

sdlcCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The core compliance statement for all SDLC
        nodes."
    MODULE
        MANDATORY-GROUPS
        {
            sdlcCorePortAdminGroup,
            sdlcCorePortOperGroup,
            sdlcCorePortStatsGroup,
            sdlcCoreLSAdminGroup,
            sdlcCoreLSOperGroup,
            sdlcCoreLSStatsGroup
        }

    OBJECT      sdlcPortAdminName
    MIN-ACCESS  read-only
    DESCRIPTION
        "Write access is not required."

```

```
OBJECT      sdlcPortAdminRole
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcPortAdminType
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcPortAdminTopology
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcPortAdminISTATUS
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAddress
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAdminName
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAdminState
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAdminISTATUS
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAdminMAXDATASend
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      sdlcLSAdminMAXDATARcv
MIN-ACCESS  read-only
DESCRIPTION
```

"Write access is not required."

OBJECT sdlcLSAdminMAXIN
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminMAXOUT
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminMODULO
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminRETRIESm
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminRETRIESt
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminRETRIESn
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminRNRLIMIT
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminDATMODE
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminGPoll
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required."

OBJECT sdlcLSAdminSimRim

MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT sdlcLSAdminRowStatus
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

::= { sdlcCompliances 1 }

sdlcPrimaryCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION
"The compliance statement for all nodes that
are performing the role of a Primary link
station."

MODULE
MANDATORY-GROUPS { sdlcPrimaryGroup }

OBJECT sdlcPortAdminPAUSE
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT sdlcLSAdminREPLYTO
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

::= { sdlcCompliances 2 }

sdlcPrimaryMultipointCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION
"The compliance statement for all nodes that
are performing the role of a primary link
station on a multipoint line."

MODULE
MANDATORY-GROUPS { sdlcPrimaryMultipointGroup }

OBJECT sdlcPortAdminSERVLIM
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT sdlcPortAdminSlowPollTimer
MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { sdlcCompliances 3 }

--

-- Core Conformance Groups for All Link Stations

--

sdlcCoreGroups OBJECT IDENTIFIER ::= { sdlcGroups 1 }

sdlcCorePortAdminGroup OBJECT-GROUP

OBJECTS

```
{
    sdlcPortAdminName,          sdlcPortAdminRole,
    sdlcPortAdminType,          sdlcPortAdminTopology,
    sdlcPortAdminISTATUS
}
```

STATUS current

DESCRIPTION

"The sdlcCorePortAdminGroup defines objects which are common to the PortAdmin group of all compliant link stations."

::= { sdlcCoreGroups 1 }

sdlcCorePortOperGroup OBJECT-GROUP

OBJECTS

```
{
    sdlcPortOperName,
    sdlcPortOperRole,
    sdlcPortOperType,
    sdlcPortOperTopology,
    sdlcPortOperISTATUS,
    sdlcPortOperACTIVTO,
    sdlcPortOperLastFailTime,
    sdlcPortOperLastFailCause
}
```

STATUS current

DESCRIPTION

"The sdlcCorePortOperGroup defines objects which are common to the PortOper group of all compliant link stations."

::= { sdlcCoreGroups 2 }

sdlcCorePortStatsGroup OBJECT-GROUP

OBJECTS

```

    {
        sdlcPortStatsPhysicalFailures,
        sdlcPortStatsInvalidAddresses,
        sdlcPortStatsDwarfFrames
    }
STATUS current
DESCRIPTION
    "The sdlcCorePortStatsGroup defines objects
    which are common to the PortStats group of all
    compliant link stations."
::= { sdlcCoreGroups 3 }

```

sdlcCoreLSAdminGroup OBJECT-GROUP

OBJECTS

```

{
    sdlcLSAddress,
    sdlcLSAdminName,
    sdlcLSAdminState,
    sdlcLSAdminISTATUS,
    sdlcLSAdminMAXDATASend,
    sdlcLSAdminMAXDATARcv,
    sdlcLSAdminMAXIN,
    sdlcLSAdminMAXOUT,
    sdlcLSAdminMODULO,
    sdlcLSAdminRETRIESt,
    sdlcLSAdminRETRIESt,
    sdlcLSAdminRETRIESt,
    sdlcLSAdminRNRLIMIT,
    sdlcLSAdminDATMODE,
    sdlcLSAdminGPoll,
    sdlcLSAdminSimRim,
    sdlcLSAdminRowStatus
}

```

STATUS current

DESCRIPTION

```

    "The sdlcCorePortAdminGroup defines objects
    which are common to the PortAdmin group of all
    compliant link stations."
::= { sdlcCoreGroups 4 }

```

sdlcCoreLSOperGroup OBJECT-GROUP

OBJECTS

```

{
    sdlcLSOperRole,
    sdlcLSOperState,
    sdlcLSOperMAXDATASend,
    sdlcLSOperMAXIN,
}

```

```

        sdlcLSOperMAXOUT,
        sdlcLSOperMODULO,
        sdlcLSOperRETRIESt,
        sdlcLSOperRETRIESt,
        sdlcLSOperRETRIESt,
        sdlcLSOperRNRLIMIT,
        sdlcLSOperDATMODE,
        sdlcLSOperLastFailTime,
        sdlcLSOperLastFailCause,
        sdlcLSOperLastFailCtrlIn,
        sdlcLSOperLastFailCtrlOut,
        sdlcLSOperLastFailFRMRInfo,
        sdlcLSOperLastFailREPLYTOs,
        sdlcLSOperEcho,
        sdlcLSOperGPoll
    }
    STATUS current
    DESCRIPTION
        "The sdlcCorePortOperGroup defines objects
        which are common to the PortOper group of all
        compliant link stations."
    ::= { sdlcCoreGroups 5 }

```

sdlcCoreLSStatsGroup OBJECT-GROUP

OBJECTS

```

{
    sdlcLSStatsBLUsIn,
    sdlcLSStatsBLUsOut,
    sdlcLSStatsOctetsIn,
    sdlcLSStatsOctetsOut,
    sdlcLSStatsPollsIn,
    sdlcLSStatsPollsOut,
    sdlcLSStatsPollRspIn,
    sdlcLSStatsPollRspOut,
    sdlcLSStatsLocalBusies,
    sdlcLSStatsRemoteBusies,
    sdlcLSStatsIFramesIn,
    sdlcLSStatsIFramesOut,
    sdlcLSStatsRetransmitsIn,
    sdlcLSStatsRetransmitsOut,
    sdlcLSStatsUIFramesIn,
    sdlcLSStatsUIFramesOut,
    sdlcLSStatsXIDsIn,
    sdlcLSStatsXIDsOut,
    sdlcLSStatsTESTsIn,
    sdlcLSStatsTESTsOut,
    sdlcLSStatsREJIn,

```

```

        sdlcLSStatsREJsOut,
        sdlcLSStatsFRMRsIn,
        sdlcLSStatsFRMRsOut,
        sdlcLSStatsSIMsIn,
        sdlcLSStatsSIMsOut,
        sdlcLSStatsRIMsIn,
        sdlcLSStatsRIMsOut,
        sdlcLSStatsProtocolErrs,
        sdlcLSStatsRNRLIMITs,
        sdlcLSStatsRetriesExps
    }
    STATUS current
    DESCRIPTION
        "The sdlcCorePortStatsGroup defines objects
        which are common to the PortStats group of all
        compliant link stations."
    ::= { sdlcCoreGroups 6 }

--
-- Conformance Groups for Primary Link Stations
--

sdlcPrimaryGroups OBJECT IDENTIFIER ::= { sdlcGroups 2 }

sdlcPrimaryGroup OBJECT-GROUP
    OBJECTS
    {
        sdlcPortAdminPAUSE,
        sdlcPortOperPAUSE,
        sdlcLSAdminREPLYTO,
        sdlcLSOperREPLYTO
    }
    STATUS current
    DESCRIPTION
        "The sdlcPrimaryGroup defines objects which
        are common to all compliant primary link
        stations."
    ::= { sdlcPrimaryGroups 1 }

sdlcPrimaryMultipointGroup OBJECT-GROUP
    OBJECTS
    {
        sdlcPortAdminSERVLIM,
        sdlcPortAdminSlowPollTimer,
        sdlcPortOperSlowPollMethod,
        sdlcPortOperSERVLIM,
        sdlcPortOperSlowPollTimer
    }

```



```
    }  
    STATUS current  
    DESCRIPTION  
        "The sdlcPrimaryMultipointGroup defines objects  
        which are common to all compliant primary link  
        stations that are in a multipoint topology."  
    ::= { sdlcPrimaryGroups 2 }
```

END

4. Acknowledgments

Thanks goes to the SNADLC MIB working group for reviewing this MIB and for their infinite patience through the editing process.

5. References

- [1] Stewart, B., "Definitions of Managed Objects for RS-232-like Hardware Devices using SMIV2", RFC 1659, Xyplex, July 1994.
- [2] "Synchronous Data Link Control: Concepts", IBM Publication No. GA27-3093-04, 5th edition, May 1992.
- [3] "Vocabulary for Data Processing Telecommunications, and Office Systems", IBM Publication No. GC20-1699-6.
- [4] Kostick, D., Kielczewski, Z., and K. Shih, Editors, "Definitions of Managed Objects for SNA NAUs using SMIV2", RFC 1666, Eicon Technology Corporation, Bell Communications Research, Novell, August 1994.
- [5] Waldbusser, S., "Row Creation with SNMPv1", Work in Progress.
- [6] McCloghrie K., and F. Kastenholz, "Evolution of the Interfaces Group of MIB-II", RFC 1573, Hughes LAN Syst, FTP Software, January 1994.

6. Glossary

link station

A link station comprises procedures and control information that coordinate the transfer of data between two nodes joined by a link connection. All traffic over the link connection is from the primary link station to one or more secondary link stations, or from a secondary link station to the primary link station.

primary link station

The link station instance on a link connection that is responsible for the control of the data link. There must be only one primary link station on a link connection. The primary link station issues commands to one or more secondary link stations.

secondary link station

The link station instance on a link connection that receives commands from the primary link station and issues responses to it.

switched line

A telecommunications line in which the connection is established by dialing. For switched lines, the SDLC startup sequence typically begins with a null exchange identifier (null XID).

leased line

A telecommunications line on which connections do not have to be established by dialing. For leased lines, the SDLC startup sequence may or may not begin with an exchange identifier (XID). While there are interface (e.g., RS.232) differences between leased and switched lines, those interface differences do not map one-to-one with differences in the SDLC startup protocol (i.e., the interface and the SDLC protocol are independent from one another).

point-to-point link

A link that connects the single primary link station to single secondary link station. A point-to-point link may be either switched or leased.

multipoint link

A link that connects the single primary link station to several secondary link stations. A multipoint link may be either switched or leased. Note: The physical interface signals for a multipoint link are different than for a point-to-point link.

Synonymous with multidrop line.

7. Security Considerations

Security issues are not discussed in this memo.

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