1. Introduction

This memo defines an extension to the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for the management of Parallel-printer-like devices.

2. The SNMPv2 Network Management Framework

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

- RFC 1442 [1] which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.

- STD 17, RFC 1213 [2] defines MIB-II, the core set of managed objects for the Internet suite of protocols.
RFC 1660  Parallel-printer-like MIB  July 1994

- RFC 1445 [3] which defines the administrative and other architectural aspects of the framework.
- RFC 1448 [4] 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.

2.1. 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.

3. Overview

The Parallel-printer-like Hardware Device MIB applies to interface ports that would most probably support the Character MIB. The most common example is Centronics-like printer port.

The Parallel-printer-like Hardware Device MIB is mandatory for all systems that have such a hardware port supporting services managed through some other MIB.

The Parallel-printer-like Hardware Port MIB includes Centronics-like and Data-Products-like parallel physical links with a similar set of control signals.

The MIB contains objects that relate to physical layer connections.

The MIB comprises one base object and three tables, detailed in the following sections. The tables contain objects for ports and input and output control signals.

3.1. Relationship to Interface MIB

The Parallel-printer-like MIB is one of many MIBs designed for layered use as described in the Interface MIB [5]. In most implementations where it is present, it will be in the lowest interface sublayer, that is, the Parallel-printer-like MIB represents the physical layer, providing service to higher layers such as the
Character MIB [6].

Although it is unlikely that a parallel printer port will actually be used as a network interface, which is the intent of the Interface MIB, the Parallel-printer-like MIB is closely connected to the Character MIB, which can share hardware interfaces with network operation, and relate to the RS-232 MIB [7].

The Interface MIB’s ifTestTable and ifRcvAddressTable are not relevant to the Parallel-printer-like MIB.

The Parallel-printer-like MIB is relevant for ifType values para(34) and perhaps others.

The Parallel-printer-like MIB requires the conformance groups ifGeneralGroup, and ifFixedLengthGroup.

Usefulness of error counters in this MIB depends on the octet counters in ifFixedLengthGroup.

4. Definitions

PARALLEL-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
Counter32, Integer32
FROM SNMPv2-SMI
InterfaceIndex
FROM IF-MIB
transmission
FROM RFC1213-MIB
MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF;

para MODULE-IDENTITY
LAST-UPDATED "9405261700Z"
ORGANIZATION "IETF Character MIB Working Group"
CONTACT-INFO
" Bob Stewart
Postal: Xyplex, Inc.
295 Foster Street
Littleton, MA 01460

Tel: 508-952-4816
Fax: 508-952-4887
E-mail: rlstewart@eng.xyplex.com"
DESCRIPTION
"The MIB module for Parallel-printer-like hardware devices."
::= { transmission 34 }

-- Generic Parallel-printer-like information

paraNumber OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of ports (regardless of their current
state) in the Parallel-printer-like port table."
::= { para 1 }

-- the Parallel-printer-like Port table

paraPortTable OBJECT-TYPE
SYNTAX SEQUENCE OF ParaPortEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"A list of port entries. The number of entries is
given by the value of paraNumber."
::= { para 2 }

paraPortEntry OBJECT-TYPE
SYNTAX ParaPortEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Status and parameter values for a port."
INDEX { paraPortIndex }
::= { paraPortTable 1 }

ParaPortEntry ::= SEQUENCE {
   paraPortIndex
      InterfaceIndex,
   paraPortType
      INTEGER,
   paraPortInSigNumber
      Integer32,
   paraPortOutSigNumber
      Integer32
}

Stewart
paraPortIndex OBJECT-TYPE
   SYNTAX InterfaceIndex
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
      "The value of ifIndex for the port. By convention
       and if possible, hardware port numbers map directly
       to external connectors. The value for each port must
       remain constant at least from one re-initialization
       of the network management agent to the next."
   ::= { paraPortEntry 1 }

paraPortType OBJECT-TYPE
   SYNTAX INTEGER {
      other(1),
      centronics(2),
      dataproducts(3)
   }
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
      "The port’s hardware type."
   ::= { paraPortEntry 2 }

paraPortInSigNumber OBJECT-TYPE
   SYNTAX Integer32
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
      "The number of input signals for the port in the
       input signal table (paraPortInSigTable). The table
       contains entries only for those signals the software
       can detect and that are useful to observe."
   ::= { paraPortEntry 3 }

paraPortOutSigNumber OBJECT-TYPE
   SYNTAX Integer32
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
      "The number of output signals for the port in the
       output signal table (paraPortOutSigTable). The
       table contains entries only for those signals the
       software can assert and that are useful to observe."
   ::= { paraPortEntry 4 }
RFC 1660  Parallel-printer-like MIB  July 1994

-- Parallel-printer-like Input Signal Table

paraInSigTable OBJECT-TYPE
SYNTAX SEQUENCE OF ParaInSigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"A list of port input control signal entries."
::= { para 3 }

paraInSigEntry OBJECT-TYPE
SYNTAX ParaInSigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Input control signal status for a hardware port."
INDEX { paraInSigPortIndex, paraInSigName }
::= { paraInSigTable 1 }

ParaInSigEntry ::= SEQUENCE {
  paraInSigPortIndex InterfaceIndex,
  paraInSigName INTEGER,
  paraInSigState INTEGER,
  paraInSigChanges Counter32
}

paraInSigPortIndex OBJECT-TYPE
SYNTAX InterfaceIndex
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of paraPortIndex for the port to which
this entry belongs."
::= { paraInSigEntry 1 }

paraInSigName OBJECT-TYPE
SYNTAX INTEGER { power(1), online(2), busy(3),
  paperout(4), fault(5) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Identification of a hardware signal."
::= { paraInSigEntry 2 }
paraInSigState OBJECT-TYPE
   SYNTAX INTEGER { none(1), on(2), off(3) }
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
   "The current signal state."
   ::= { paraInSigEntry 3 }

paraInSigChanges OBJECT-TYPE
   SYNTAX Counter32
   MAX-ACCESS read-only
   STATUS current
   DESCRIPTION
   "The number of times the signal has changed from 'on' to 'off' or from 'off' to 'on'."
   ::= { paraInSigEntry 4 }

-- Output Signal Table

paraOutSigTable OBJECT-TYPE
   SYNTAX SEQUENCE OF ParaOutSigEntry
   MAX-ACCESS not-accessible
   STATUS current
   DESCRIPTION
   "A list of port output control signal entries."
   ::= { paraOutSigTable 1 }

paraOutSigEntry OBJECT-TYPE
   SYNTAX ParaOutSigEntry
   MAX-ACCESS not-accessible
   STATUS current
   DESCRIPTION
   "Output control signal status for a hardware port."
   INDEX { paraOutSigPortIndex, paraOutSigName }
   ::= { paraOutSigTable 1 }

ParaOutSigEntry ::= SEQUENCE {
   paraOutSigPortIndex
   InterfaceIndex,
   paraOutSigName
   INTEGER,
   paraOutSigState
   INTEGER,
   paraOutSigChanges
   Counter32
}

Stewart                                                         [Page 7]
paraOutSigPortIndex OBJECT-TYPE
SYNTAX InterfaceIndex
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of paraPortIndex for the port to which
this entry belongs."
 ::= { paraOutSigEntry 1 }

paraOutSigName OBJECT-TYPE
SYNTAX INTEGER { power(1), online(2), busy(3),
paperout(4), fault(5) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Identification of a hardware signal."
 ::= { paraOutSigEntry 2 }

paraOutSigState OBJECT-TYPE
SYNTAX INTEGER { none(1), on(2), off(3) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The current signal state."
 ::= { paraOutSigEntry 3 }

paraOutSigChanges OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of times the signal has changed from
'on' to 'off' or from 'off' to 'on'."
 ::= { paraOutSigEntry 4 }

-- conformance information

paraConformance OBJECT IDENTIFIER ::= { para 5 }

paraGroups OBJECT IDENTIFIER ::= { paraCompliances 1 }
paraCompliances OBJECT IDENTIFIER ::= { paraConformance 2 }
-- compliance statements

paraCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The compliance statement for SNMPv2 entities
             which have Parallel-printer-like hardware
             interfaces."

MODULE -- this module
  MANDATORY-GROUPS { paraGroup }
  ::= { paraCompliances 1 }

-- units of conformance

paraGroup OBJECT-GROUP
  OBJECTS { paraNumber, paraPortIndex, paraPortType, 
             paraPortInSigNumber, paraPortOutSigNumber, 
             paraInSigPortIndex, paraInSigName, 
             paraInSigState, paraInSigChanges, 
             paraOutSigPortIndex, paraOutSigName, 
             paraOutSigState, paraOutSigChanges }
  STATUS current
  DESCRIPTION "A collection of objects providing information
              applicable to all Parallel-printer-like interfaces."
  ::= { paraGroups 1 }

END

5. Acknowledgements

This memo was produced by the IETF Character MIB Working Group.

6. References

    of Management Information for version 2 of the Simple Network
    Management Protocol (SNMPv2)", RFC 1442, SNMP Research,Inc.,
    Hughes LAN Systems, Dover Beach Consulting, Inc., Carnegie Mellon
    University, April 1993.

    Base for Network Management of TCP/IP-based internets: MIB-II",
    STD 17, RFC 1213, Hughes LAN Systems, Performance Systems


7. Security Considerations

Security issues are not discussed in this memo.

8. Author’s Address

Bob Stewart
Xyplex, Inc.
295 Foster Street
Littleton, MA 01460

Phone: 508-952-4816
Fax: 508-952-4887
EMail: rlstewart@eng.xyplex.com