

Network Working Group  
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Category: Experimental

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## TCP/IPX Connection Mib Specification

### Status of this Memo

This document defines an Experimental Protocol for the Internet community. This does not specify an Internet standard of any kind. Discussion and suggestions for improvement are requested. Distribution of this memo is unlimited.

### IESG Note:

Internet Engineering Steering Group comment from the Area Director for Transport Services: Please note well that this memo is an individual product of the author. Implementation experience, particularly on the effectiveness of the protocols in dual-stack environments, is needed.

### 1. Introduction

Traditionally, TCP and UDP runs over IP. STD 17, RFC 1213 defines TCP connection MIB object and UDP listener object assuming just that. For TCP and UDP running over IPX, tcpConnTable and udpTable objects from RFC 1213 cannot be used since they define the address to be of type IpAddress. As such, we need to define new objects that can properly describe TCP and UDP connections over IPX.

New MIB objects, tcpIpxConnTable, udpIpxTable, tcpUnspecConnTable and udpUnspecTable are presented in this paper, to be used in place of tcpConnTable and udpListenerTable when TCP and UDP are running over IPX.

### 2. Objects

```
TCTIPX-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    OBJECT-TYPE
```

```
    FROM RFC-1212;
```

```
-- IPX address type.
```

```
-- First 4 octets are the network numbers and the last 6
```

```
-- octets are the node numbers. In ascii, it is represented
```

```

-- as hex digits, as in:  nnnnnnnn:mmmmmmmmmmmmmmmm
IpxAddress ::= OCTET STRING (size (10))

-- TCP/IPX MIB object identifiers

novell      OBJECT IDENTIFIER ::= { enterprises 23 }
mibDoc      OBJECT IDENTIFIER ::= { novell 2 }
tcpX        OBJECT IDENTIFIER ::= { mibDoc 29 }
tcpXTcp     OBJECT IDENTIFIER ::= { tcpX 1 }
tcpXUdp     OBJECT IDENTIFIER ::= { tcpX 2 }

-- the TCP/IPX Connection table

-- The TCP/IPX connection table contains information
-- about this entity's existing TCP connections over
-- IPX.

tcpIpxConnTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcpIpxConnEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "A table containing information specific on
        TCP connection over IPX network layer."

    ::= { tcpXTcp 1 }

tcpIpxConnEntry OBJECT-TYPE
    SYNTAX TcpIpxConnEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular current TCP
        connection over IPX. An object of this type is
        transient, in that it ceases to exist when (or
        soon after) the connection makes the transition
        to the CLOSED state."
    INDEX { tcpIpxConnLocalAddress,
            tcpIpxConnLocalPort,
            tcpIpxConnRemAddress,
            tcpIpxConnRemPort }
    ::= { tcpIpxConnTable 1 }

TcpIpxConnEntry ::=
    SEQUENCE {

```

```

    tcpIpxConnState
        INTEGER,
    tcpIpxConnLocalAddress
        IpxAddress
    tcpIpxConnLocalPort
        INTEGER (0..65535),
    tcpIpxConnRemAddress
        IpxAddress,
    tcpIpxConnRemPort
        INTEGER (0..65535)
}

tcpIpxConnState OBJECT-TYPE
    SYNTAX  INTEGER {
                closed(1),
                listen(2),
                synSent(3),
                synReceived(4),
                established(5),
                finWait1(6),
                finWait2(7),
                closeWait(8),
                lastAck(9),
                closing(10),
                timeWait(11),
                deleteTCB(12)
            }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The state of this TCP connection.

        The only value which may be set by a management
        station is deleteTCB(12).  Accordingly, it is
        appropriate for an agent to return a 'badValue'
        response if a management station attempts to set
        this object to any other value.

        If a management station sets this object to the
        value deleteTCB(12), then this has the effect of
        deleting the TCB (as defined in RFC 793) of the
        corresponding connection on the managed node,
        resulting in immediate termination of the
        connection.

        As an implementation-specific option, a RST
        segment may be sent from the managed node to the
        other TCP endpoint (note however that RST

```

```
        segments are not sent reliably)."  
 ::= { tcpIpxConnEntry 1 }  
  
tcpIpxConnLocalAddress OBJECT-TYPE  
    SYNTAX  IpxAddress  
    ACCESS  read-only  
    STATUS  mandatory  
    DESCRIPTION  
        "The local IPX address for this TCP connection.  
        In the case of a connection in the listen state  
        which is willing to accept connections for any  
        interface, the value 00000000:000000000000 is  
        used. See tcpUnspecConnTable for connections in  
        the listen state which is willing to accept  
        connects for any IP interface associated with  
        the node."  
 ::= { tcpIpxConnEntry 2 }  
  
-- NetworkAddress defined in SMI only include IP currently,  
-- so we can't use it to represent both IP and IPX address.  
  
tcpIpxConnLocalPort OBJECT-TYPE  
    SYNTAX  INTEGER (0..65535)  
    ACCESS  read-only  
    STATUS  mandatory  
    DESCRIPTION  
        "The local port number for this TCP connection."  
 ::= { tcpIpxConnEntry 3 }  
  
tcpIpxConnRemAddress OBJECT-TYPE  
    SYNTAX  IpxAddress  
    ACCESS  read-only  
    STATUS  mandatory  
    DESCRIPTION  
        "The remote IPX address for this TCP connection."  
 ::= { tcpIpxConnEntry 4 }  
  
tcpIpxConnRemPort OBJECT-TYPE  
    SYNTAX  INTEGER (0..65535)  
    ACCESS  read-only  
    STATUS  mandatory  
    DESCRIPTION  
        "The remote port number for this TCP connection."  
 ::= { tcpIpxConnEntry 5 }
```

```

-- the UDP Listener table

-- The UDP listener table contains information about this
-- entity's UDP end-points on which a local application is
-- currently accepting datagrams.

udpIpXTable OBJECT-TYPE
    SYNTAX SEQUENCE OF UdpIpXEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "A table containing UDP listener information."
    ::= { tcpXUdp 1 }

udpIpXEntry OBJECT-TYPE
    SYNTAX UdpIpXEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular current UDP
        listener."
    INDEX { udpIpXLocalAddress, udpIpXLocalPort }
    ::= { udpIpXTable 1 }

UdpIpXEntry ::=
    SEQUENCE {
        udpIpXLocalAddress
        IpXAddress
        udpIpXLocalPort
        INTEGER (0..65535)
    }

udpIpXLocalAddress OBJECT-TYPE
    SYNTAX IpXAddress
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The local IPX address for this UDP listener. In
        the case of a UDP listener which is willing to
        accept datagrams for any interface, the value
        00000000:000000000000 is used. See
        udpUnspecTable for UDP listener which is
        willing to accept datagrams from any network
        layer."
    ::= { udpIpXEntry 1 }

udpIpXLocalPort OBJECT-TYPE
    SYNTAX INTEGER (0..65535)

```

```

ACCESS read-only
STATUS mandatory
DESCRIPTION
    "The local port number for this UDP listener."
 ::= { udpIpXEntry 2 }

-- the TCP/UNSPEC Connection table

-- The TCP/UPSPEC connection table contains information
-- about this entity's existing TCP connections over
-- unspecified network.
-- Since the network is unspecified, the network
-- address is also unspecified. Hence, this
-- connection table does not include any network
-- address.

tcpUnspecConnTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcpIpXConnEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "A table containing information specific on
        TCP connection over unspecified network layer."

    ::= { tcpXtcp 2 }

tcpUnspecConnEntry OBJECT-TYPE
    SYNTAX TcpUnspecConnEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular current TCP
        connection over unspecified network layer. An
        object of this type is transient, in that it
        ceases to exist when the connection makes
        transition beyond LISTEN state, or when (or
        soon after) the connection makes transition
        to the CLOSED state,"

    INDEX { tcpUnspecConnLocalPort }
    ::= { tcpUnspecConnTable 1 }

TcpUnspecConnEntry ::=
    SEQUENCE {
        tcpUnspecConnState
            INTEGER,
        tcpUnspecConnLocalPort
    }

```

```

        INTEGER (0..65535),
    }
tcpUnspecConnState OBJECT-TYPE
    SYNTAX  INTEGER {
                closed(1),
                listen(2),
                deleteTCB(12)
            }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "The state of this TCP connection.

        Since the TCP connection can belong to this table
        only when its state is less than SYN_SENT, only
        closed and listen state apply.

        The only value which may be set by a management
        station is deleteTCB(12).  Accordingly, it is
        appropriate for an agent to return a 'badValue'
        response if a management station attempts to set
        this object to any other value.

        If a management station sets this object to the
        value deleteTCB(12), then this has the effect of
        deleting the TCB (as defined in RFC 793) of the
        corresponding connection on the managed node,
        resulting in immediate termination of the
        connection.

        As an implementation-specific option, a RST
        segment may be sent from the managed node to the
        other TCP endpoint (note however that RST
        segments are not sent reliably)."
```

```
 ::= { tcpUnspecConnEntry 1 }
```

```

tcpUnspecConnLocalPort OBJECT-TYPE
    SYNTAX  INTEGER (0..65535)
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The local port number for this TCP connection."
 ::= { tcpUnspecConnEntry 2 }
```

```
-- the UDP Listener table

-- The UDP listener table contains information about this
-- entity's UDP end-points over unspecified network layer,
-- on which a local application is currently accepting
-- datagrams.  If network layer is unspecified, the network
-- address is also unspecified.  Hence, this table does not
-- include any network address.

udpUnspecTable OBJECT-TYPE
    SYNTAX SEQUENCE OF UdpUnspecEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "A table containing UDP listener information."
    ::= { tcpXUdp 2 }

udpUnspecEntry OBJECT-TYPE
    SYNTAX UdpUnspecEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular current UDP
        listener."
    INDEX { udpUnspecLocalPort }
    ::= { udpUnspecTable 1 }

UdpUnspecEntry ::=
    SEQUENCE {
        udpUnspecLocalPort
            INTEGER (0..65535)
    }

udpUnspecLocalPort OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The local port number for this UDP listener."
    ::= { udpUnspecEntry 1 }

END
```

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Security Considerations

Security issues are not discussed in this memo.

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