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<dratf-ietf-ipfc-interconnect-mib-00.txt>

Fibre Channel Interconnect MIB

Status of this Memo

Abstract

This memo defines an experimental portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for managing the operations of any Fibre Channel Interconnection device, or set of devices. An example of a Fibre Channel Interconnection would be a FC-AL repeater (or hub) or a FC Fabric Switch.


```
   SNMP-FIBRE-CHANNEL-DEVICE-MIB DEFINITIONS ::= BEGIN


   IMPORTS
       Counter32, Counter64, Integer32, Gauge32, TimeTicks,
       OBJECT-TYPE, MODULE-IDENTITY, NOTIFICATION-TYPE, mib-2
           FROM SNMPv2-SMI
       TimeStamp, DisplayString, TEXTUAL-CONVENTION
           FROM SNMPv2-TC
```

```
snmpFibreChannelDeviceMgt OBJECT IDENTIFIER ::= { mib-2 XYZ }

      snmpFibreChannelInterconnectionMod MODULE-IDENTITY
       LAST-UPDATED    "9806200000Z"
       ORGANIZATION    "IETF Fibre Channel Working Group"
       CONTACT-INFO
           "
               Editor: Mr. Kim Banker
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                       6840 Via Del Oro
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               E-mail: banker@gadzoox.com"
       DESCRIPTION
           "Common Management information for Fibre Channel
            Interconnection Devices.

           The following terms are used throughout this
           MIB module:

           Domain - A managed entity compliant with this MIB,
           and incorporating at least one managed (Fibre Channel
           Interconnection) Device.

           Device - A managed entity that contains at least one
           Group of managed objects.  The direct management mechanism
           for managing a device may, or may not, be SNMP.

           Group - A managed entity that (typically) contains at
           least one Port.  The classical example allows
           an implementor to represent field-replaceable units as
           groups of ports, with the port numbering matching the
           modular hardware implementation.
           "
       ::= { snmpFibreChannelDeviceMgt 6 }
```



```
   -- Basic information at the domain, device, group, and port level.

   fcicBasicPackage
       OBJECT IDENTIFIER ::= { snmpFibreChannelDeviceMgt  1 }
     fcicDomainInfo
           OBJECT IDENTIFIER ::= { fcicBasicPackage 1 }
     fcicDeviceInfo
           OBJECT IDENTIFIER ::= { fcicBasicPackage 2 }
     fcicGroupInfo
           OBJECT IDENTIFIER ::= { fcicBasicPackage 3 }
```

```
  fcicPortInfo
        OBJECT IDENTIFIER ::= { fcicBasicPackage 4 }

-- Future packages for consideration.

fcicMonitorPackage
    OBJECT IDENTIFIER ::= { snmpFibreChannelDeviceMgt 2 }
fcicAddrTrackPackage
    OBJECT IDENTIFIER ::= { snmpFibreChannelDeviceMgt 3 }
fcicTopNPackage
    OBJECT IDENTIFIER ::= { snmpFibreChannelDeviceMgt 4 }


-- Basic information at the domain level.
--

fcicDomainDeviceCount OBJECT-TYPE
    SYNTAX      Integer32 (1..2147483647)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
            "The fcicDomainDeviceCount is the number of
            interconnection devices that can are actually managed
            within this domain at any instance in time.  This value
            may vary over time."
    ::= { fcicDomainInfo 1 }
```



```
-- Basic information at the device level.
--

fcicDeviceTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF FcicDeviceEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "Table of descriptive and status information about
            the devices within a Fibre Channel Interconnection
            Domain."
    ::= { fcicDeviceInfo 1 }

fcicDeviceEntry OBJECT-TYPE
    SYNTAX      FcicDeviceEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
            "An entry in the table, containing information
            about a single interconnection device."
    INDEX    { fcicDeviceIndex }
```

```
        ::= { fcicDeviceTable 1 }

    FcicDeviceEntry ::=
        SEQUENCE {
            fcicDeviceIndex
                Integer32,
            fcicDeviceType
                INTEGER,
            fcicDeviceObjectID
                OBJECT IDENTIFIER,
            fcicDeviceOperStatus
                INTEGER,
            fcicDeviceReset
                INTEGER,
            fcicDeviceByPassedPorts
                Gauge32,
            fcicDeviceLastChange
                TimeStamp,
            fcicDeviceGroupCapacity
                Integer32
       }

    fcicDeviceIndex OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object identifies the device within the
                domain for which this entry contains information."
        ::= { fcicDeviceEntry 1 }
```



```
    fcicDeviceType OBJECT-TYPE
        SYNTAX  INTEGER {
                    other(1),          -- undefined or unknown device
                    hub(2),
                    bridge(3),
                    switch(4)
                }
        ACCESS    read-only
        STATUS    current
        DESCRIPTION
                "The fcicDeviceType object indicates the type of
                 interconnection device being managed."
        ::= { fcicDeviceEntry 2 }

    fcicDeviceObjectID OBJECT-TYPE
        SYNTAX      OBJECT IDENTIFIER
```

```
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The vendor's authoritative identification of the
                device.  This value may be allocated within the SMI
                enterprises subtree (1.3.6.1.4.1) and provides a
                straight-forward and unambiguous means for
                determining what kind of device is being managed."
        ::= { fcicDeviceEntry 3 }

    fcicDeviceOperStatus OBJECT-TYPE
        SYNTAX      INTEGER {
                      other(1),
                      ok(2),
                      failure(3)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The fcicDeviceOperStatus object indicates the
                operational state of the device."
        ::= { fcicDeviceEntry 4 }

    fcicDeviceReset OBJECT-TYPE
        SYNTAX    INTEGER {
                      noReset(1),
                      reset(2)
                    }
        ACCESS    read-write
        STATUS    current
        DESCRIPTION
                "Setting this object to reset(2) causes a
                transition to the "reset" state.

                Setting this object to noReset(1) has no effect.
                The agent will always return the value noReset(1)
                when this object is read.

                After receiving a request to set this variable to
                reset(2), the agent is allowed to delay the reset
                for a short period.  For example, the implementor
                may choose to delay the reset long enough to allow
                the SNMP response to be transmitted.  In any
                event, the SNMP response must be transmitted."
        ::= { fcicDeviceInfo 5 }
```



```
    fcicDeviceByPassedPorts OBJECT-TYPE
```

```
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object returns the total number of ports in
                the device whose current state meets all three
                of the following criteria:  fcicPortOperStatus
                does not have the value notPresent(3),
                fcicPortAdminStatus is enabled(1), and
                fcicPortByPassState is byPassed(2)."
        ::= { fcicDeviceEntry 6 }

    fcicDeviceLastChange OBJECT-TYPE
        SYNTAX      TimeStamp
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The value of sysUpTime when any of the following
                conditions occurred:
                  1) agent cold- or warm-started;
                  2) this instance of device was created
                     (such as when a device was added to the domain);
                  3) a change in the value of fcicDeviceOperStatus;
                  4) ports were added or removed as members of
                     the device.
                  5) modules were added or removed as members of
                     the device."
        ::= { fcicDeviceEntry 7 }

    fcicDeviceGroupCapacity OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The fcicDeviceGroupCapacity is the maximum number of
                groups that can be contained within this device.
                This value does not represent the actual number of
                groups currently managed in the device, but rather
                indicates the absolute maximum allowed for.  For any
                given device, this value should never change."
        ::= { fcicDeviceEntry 8 }
```



```
-- Basic information at the group level.
    --
    -- Configuration and status objects for each
    -- managed group in a device of the domain.
```

```
   fcicGroupTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF FcicGroupEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "Table of descriptive and status information about
               the groups."
       ::= { fcicGroupInfo 1 }

   fcicGroupEntry OBJECT-TYPE
       SYNTAX      FcicGroupEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "An entry in the table, containing information
               about a single group from a device in the domain."
       INDEX    { fcicGroupDeviceIndex, fcicGroupIndex }
       ::= { fcicGroupTable 1 }

   FcicGroupEntry ::=
       SEQUENCE {
           fcicGroupDeviceIndex
               Integer32,
           fcicGroupIndex
               Integer32,
           fcicGroupType
               INTEGER,
           fcicGroupObjectID
               OBJECT IDENTIFIER,
           fcicGroupOperStatus
               INTEGER,
           fcicGroupPortCapacity
               Integer32
       }
```



```
   fcicGroupDeviceIndex OBJECT-TYPE
       SYNTAX      Integer32 (1..2147483647)
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "This object identifies the device containing the
               group for which this entry contains information."
       ::= { fcicGroupEntry 1 }

   fcicGroupIndex OBJECT-TYPE
       SYNTAX      Integer32 (1..2147483647)
       MAX-ACCESS  read-only
```

```
        STATUS      current
        DESCRIPTION
                "This object identifies the group within the
                domain for which this entry contains information."
        ::= { fcicGroupEntry 2 }

    fcicGroupType OBJECT-TYPE
        SYNTAX  INTEGER {
                    other(1),            -- undefined or unknown group
                    copper-ports(2),
                    fiber-ports(3),
                    GBIC-ports(4),
                    mixed-ports(5)
                }
        ACCESS    read-only
        STATUS    current
        DESCRIPTION
                "The fcicGroupType object indicates the type of
                 interconnection device group being managed."
        ::= { fcicGroupEntry 3 }

    fcicGroupObjectID OBJECT-TYPE
        SYNTAX      OBJECT IDENTIFIER
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The vendor's authoritative identification of the
                group.  This value may be allocated within the SMI
                enterprises subtree (1.3.6.1.4.1) and provides a
                straight-forward and unambiguous means for
                determining what kind of group is being managed.

                For example, this object could take the value
                1.3.6.1.4.1.4242.1.2.14 if vendor 'Flintstones,
                Inc.' was assigned the subtree 1.3.6.1.4.1.4242,
                and had assigned the identifier
                1.3.6.1.4.1.4242.1.2.14 to its 'Wilma Flintstone
                6-Port Plug-in Module.'"
        ::= { fcicGroupEntry 4 }
```



```
    fcicGroupOperStatus OBJECT-TYPE
        SYNTAX      INTEGER {
                      other(1),
                      operational(2),
                      malfunctioning(3),
                      notPresent(4),
                      underTest(5),
```

```
                  resetInProgress(6)
                }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "An object that indicates the operational status
                of the group.

                A status of notPresent(4) indicates that the group
                is temporarily or permanently physically and/or
                logically not a part of the device.

                A status of operational(2) indicates that the
                group is functioning, and a status of
                malfunctioning(3) indicates that the group is
                malfunctioning in some way."
        ::= { fcicGroupEntry 5 }

    fcicGroupPortCapacity OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The fcicGroupPortCapacity is the maximum number of
                ports that can be contained within this group.
                This value does not represent the actual number of
                ports currently managed in the group, but rather
                indicates the absolute maximum allowed for.  For any
                given group, this value should never change."
        ::= { fcicGroupEntry 6 }
```



```
    -- Basic information at the port level.
    --
    -- Configuration and status objects for
    -- each managed port in a group on a device of the domain

    fcicPortTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF FcicPortEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
                "Table of descriptive and status information about
                the device ports in the domain."
        ::= { fcicPortInfo 1 }

    fcicPortEntry OBJECT-TYPE
        SYNTAX      FcicPortEntry
```

```
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
                "An entry in the table, containing information
                about a single port of a group from a device in the
                domain."
        INDEX    { fcicPortDeviceIndex,
                   fcicPortGroupIndex,
                   fcicPortIndex }
        ::= { fcicPortTable 1 }

    FcicPortEntry ::=
        SEQUENCE {
            fcicPortDeviceIndex
                Integer32
            fcicPortGroupIndex
                Integer32,
            fcicPortIndex
                Integer32,
            fcicPortAdminStatus
                INTEGER,
            fcicPortByPassState
                INTEGER,
            fcicPortOperStatus
                INTEGER,
            fcicPortMediaType
                INTEGER,
            fcicPortMaxBaudRateCapability
                INTEGER,
            fcicPortBaudRate
                INTEGER
          }

    fcicPortDeviceIndex OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object identifies the device containing the
                port for which this entry contains information."
        ::= { fcicPortEntry 1 }
```



```
    fcicPortGroupIndex OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
```

```
                "This object identifies the group containing the
                port for which this entry contains information."
        ::= { fcicPortEntry 2 }

    fcicPortIndex OBJECT-TYPE
        SYNTAX      Integer32 (1..2147483647)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object identifies the port within the device
                and group for which this entry contains information.
                The numbering scheme for ports is implementation
                specific; however, this value can never be greater than
                fcicGroupPortCapacity for the associated group."
        ::= { fcicPortEntry 3 }

    fcicPortAdminStatus OBJECT-TYPE
        SYNTAX      INTEGER {
                      enabled(1),
                      disabled(2)
                    }
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "Setting this object to disabled(2) disables the
                port.  A disabled port neither transmits nor
                receives data.  Once disabled, a port must be
                explicitly enabled to restore operation.  A port
                which is disabled when power is lost or when a
                reset is exerted shall remain disabled when normal
                operation resumes.
                Setting this object to enabled(1) enables the port
                and allows the port to both transmit and receive
                data."
        ::= { fcicPortEntry 4 }
```



```
    fcicPortByPassState OBJECT-TYPE
        SYNTAX      INTEGER {
                      notByPassed(1),
                      byPassed(2)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The byPassState flag indicates whether the
                port is currently byPassed.  A port may be byPassed
                either because it has a failure or it has be disabled
```

```
                via the fcicPortAdminStatus."
        ::= { fcicPortEntry 5 }

    fcicPortOperStatus  OBJECT-TYPE
        SYNTAX      INTEGER {
                      operational(1),
                      notOperational(2),
                      notPresent(3)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object indicates the port's operational
                status.  The notPresent(3) status indicates the
                port is physically removed (note this may or may
                not be possible depending on the type of port.)
                The operational(1) status indicates that the port
                is enabled and working, even though it might be
                byPassed.

                If this object has the value operational(1) and
                fcicPortAdminStatus is set to disabled(2), it is
                expected that this object's value will soon change
                to notOperational(2)."
        ::= { fcicPortEntry 6 }

    fcicPortMediaType  OBJECT-TYPE
        SYNTAX    INTEGER {
                      other(1),
                      GBIC(2),
                      copperInterCabinet(3),
                      copperIntraCabinet(4),
                      fiberShortWave(5),
                      fiberLongWave(6)
                  }
        ACCESS    read-only
        STATUS    current
        DESCRIPTION
                "This object indicates the port's media type.  GBIC
                 identifies a GigaBit Interface Converter that will have
                 futher definition a future GBIC MIB."
        ::= { fcicPortEntry 7 }
```



```
    fcicPortMaxBaudRateCapability OBJECT-TYPE
           SYNTAX    INTEGER {
                       other(1),
                       oneEighth(2),
```

```
                    quarter(4),
                    half(8),
                    full(16),
                    double(32),
                    1.25MBit/Sec(64),
                    2.50MBit/Sec(128)
                }
        ACCESS    read-only
        STATUS    current
        DESCRIPTION
                "This object indicates the port's maximum baud rate speed
                 supported"
        ::= { fcicPortEntry 8 }

    fcicPortBaudRate  OBJECT-TYPE
        SYNTAX    INTEGER {
                    other(1),
                    oneEighth(2),
                    quarter(4),
                    half(8),
                    full(16),
                    double(32),
                    1.25MBit/Sec(64),
                    2.50MBit/Sec(128)
                }
        ACCESS    read-only
        STATUS    current
        DESCRIPTION
                "This object indicates the  port's currentbaud rate"
        ::= { fcicPortEntry 9 }

END
```