

Dedicated Token Ring Concentrator MIB

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Abstract

This document contains an extract from the approved text of IEEE standard 802.5R 'Dedicated Token Ring'. The extract comprises the MIB for the Dedicated Token Ring Concentrator, in SNMPv2 format. The changes from the previous version of this draft are small but important, and are in the area of CRF creation, where a RowStatus mechanism replaces the previous way of creating CRFs.

802.5R is a standard that encompasses the existing 802.5 token-passing method of operation, and also defines a new duplex method of operation for use only on dedicated point to point links, that does not use tokens for data transmission.

The architecture of a DTR Concentrator is defined in the 802.5R standard. It is a MAC layer bridging device, which uses a new set of forwarding rules that ease interoperability between source routing and transparent bridging in an 802.5 LAN. The DTR Concentrator MIB is derived from the Source Routing and Transparent Bridge MIBs (RFCs 1525 and 1493).

Background

In the past, SNMP MIBs for IEEE 802 standards have been written by members of the IETF Network Management Working Group, on the basis of GDMO management information in the IEEE document. However, in this case, the draft IEEE 802.5R standard contains its management information in SNMP MIB format.

Brief Introduction to Dedicated Token Ring

The operation of Dedicated Token Ring (DTR) involves communication between two distinct entities. These are the DTR Station, and the DTR Concentrator Port (C-Port). A DTR link consists of one DTR Station and one C-Port. To provide links between DTR Concentrators, a C-Port may act as a DTR Station (C-Port in Station Emulation Mode).

When operating as a dedicated link, there is no token passing, and the Transmit Immediate (TXI) function is used to transmit data.

In addition, DTR Stations and C-Ports are required to be able to support token-passing (TKP) operation, also referred to as Classic Token Ring operation.

Stations and C-Ports will automatically detect the appropriate access protocol to use when they are enabled.

In summary, DTR provides a way of connecting a Station to a

Concentrator on a dedicated link with an aggregate throughput of 32 MBits/sec, and also provides backwards compatibility with shared media token passing operation at 16 or 4 MBits/sec.

A DTR Concentrator may provide a MAC layer relay service between any mixture of DTR links and Classic 802.5 rings.

DTR Interface MIB

```
DTRConcentratorMIB DEFINITIONS ::= BEGIN
```

```
    IMPORTS
```

```
        enterprises
```

```
            FROM RFC1155-SMI
```

```
        MODULE-IDENTITY, OBJECT-TYPE, Counter32, Integer32,  
        TimeTicks
```

```
            FROM SNMPv2-SMI
```

```
        InterfaceIndex
```

```
            FROM IF-MIB
```

```
        MODULE-COMPLIANCE, OBJECT-GROUP
```

```
            FROM SNMPv2-CONF
```

```
        IANAifType
```

```
            FROM IANAifType-MIB
```

```
        TruthValue, DisplayString, RowStatus,
```

```
        TEXTUAL-CONVENTION, MacAddress
```

```
            FROM SNMPv2-TC;
```

```
dtrConcMIB    MODULE-IDENTITY
```

```
    LAST-UPDATED "9510121200Z"
```

```
    ORGANIZATION " IEEE 802.5 "
```

```
    CONTACT-INFO
```

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```


DESCRIPTION

" The MIB Module for DTR Concentrators. "
 ::= { ieee8025dtr 2 }

ieee8025 OBJECT IDENTIFIER ::= { enterprises 2043 }
 ieee8025dtr OBJECT IDENTIFIER ::= { ieee8025 1 }

dtrConcMIBObjects OBJECT IDENTIFIER ::= { dtrConcMIB 1 }
 dtrConcMIBBase OBJECT IDENTIFIER ::= { dtrConcMIBObjects 1 }
 dtrConcMIBSpTree OBJECT IDENTIFIER ::= { dtrConcMIBObjects 2 }
 dtrConcMIBForwarding OBJECT IDENTIFIER ::= { dtrConcMIBObjects 3 }
 dtrConcMIBMRI OBJECT IDENTIFIER ::= { dtrConcMIBObjects 4 }
 dtrConcMIBStats OBJECT IDENTIFIER ::= { dtrConcMIBObjects 5 }

-- *****

-- This SNMP MIB Module contains definitions for management
 -- of a DTR Concentrator. The MIB consists of the following
 -- groups:

- 1. Base DTR Concentrator Information (mandatory)
- 2. DTR Concentrator Spanning Tree Information (optional)
- 3. DTR Concentrator Forwarding Information (optional)
- 4. DTR Concentrator MRI Information (optional)
- 5. DTR Concentrator Statistics Information (optional)

-- *****

-- Relationship to [RFC1493](#)

-- [RFC1493](#) is not used for management of any CRF object.
 -- However, if a Bridge Relay Function is defined for the
 -- DTR Concentrator, the Bridge MIB is used for the Bridge
 -- Relay Function.

-- Relationship to [RFC1573](#)

-- Layering Model

-- This MIB describes the Concentrator Relay Function (CRF)
 -- which forwards frames based on addressing and other
 -- information extracted from a received "lower layer" data
 -- frame. For the purposes of [RFC1573](#), the CRF forwards
 -- frames by building an "upper layer" protocol "logical
 -- entity" used to connect several physical C-Ports to an
 -- optional internal Bridge Relay Function interface. The
 -- same CRF can be defined as the "upper layer" for multiple
 -- interfaces. A given C-Port or internal Bridge Relay
 -- Function interface provides data to only a single CRF.

-- Virtual Circuits

-- The CRF does not support virtual circuits.


```
-- ifTestTable
--     The CRF does not implement tests via SNMP.

-- ifRcvAddressTable
--     For interfaces that correspond to a C-Port: The C-Port
--     operates in promiscuous mode, hence this table contains
--     only the all station broadcast address, the functional
--     address bit mask (if any are enabled), and the C-Port
--     individual address. Note that MAC traffic targeted
--     to this C-Port entry is not forwarded to the CRF.
--     Bridge Relay Function interfaces are not implemented
--     in this table.

-- ifType
--     Additional IANAifType enumerated values are required for
--     this MIB. These enumerated values correspond to the
--     following:
--         1. C-Port Interface (86).
--         2. Internal Bridge Relay Function interface (98).
--     This MIB maps dtrCRFPortType to ifType in RFC1573.

-- Textual Conventions

BridgeId ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "The bridge identifier used in the spanning tree and
        defined in ISO/IEC 10038:1993, clause 4."
    SYNTAX OCTET STRING (SIZE(8))

DynamicAddrFdbStatus ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        " Status of an Dynamic MAC address entry in the CRF
        Filtering Database.
```

other(1) indicates some other MIB object (not the corresponding instance of dtrFdbDynamicAddrPortNumber, nor an entry in the dtrFdbStaticAddrTable) is being used to determine if and how frames addressed to the value of the corresponding instance of dtrFdbDynamicAddrStnAddress are forwarded.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table.

learned(3) indicates dtrFdbDynamicAddrPortNumber for this entry was learned, and is being used.

self(4) indicates this instance of dtrFdbDynamicAddrStnAddress represents one of the CRF Addresses. The corresponding instance of dtrFdbDynamicPortNumber's indicates which CRF Port has this address.

mgmt(5) indicates the corresponding instance of dtrFdbDynamicAddrStnAddress is also a value of an existing DtrFdbStaticAddrStnAddress. "

SYNTAX INTEGER {other(1), invalid(2), learned(3), self(4),
mgmt(5) }

DynamicRDFdbStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" Status of this entry.

other(1) indicates some other MIB object is being used to determine how/if a frame containing this Destination Route Descriptor is forwarded.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table.

learned(3) indicates dtrFdbDynamicRDPortNumber for this entry was learned.

internalBridgeRelayFunction(4) indicates dtrFdbDynamicRDRouteDesc and represents a relay across the Bridge Relay Function of this DTR Concentrator.

mgmt(5) indicates dtrFdbDynamicRDRouteDesc is also a value of an existing dtrFdbStaticRDRouteDesc in the dtrFdbStaticRDTable. "

SYNTAX INTEGER {other(1), invalid(2), learned(3),
internalBridgeRelayFunction(4), mgmt(5) }

StaticFdbStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

" Status of an entry in the CRF Filtering Database.

other(1) indicates this entry is currently in use under conditions different from the available status definitions that follow.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table. Writing this value to the object removes the entry.

permanent(3) indicates this entry is currently in use and will remain so after the next reset.

deleteOnReset(4) indicates this entry is currently in use and will remain so until the next reset. "

SYNTAX INTEGER {other(1), invalid(2), permanent(3), deleteOnReset(4)}

DestinationRouteDescriptor ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The Destination Route Descriptor (DRD) consists of 2 parts; a 4 bit Bridge Number and a 12 bit LAN ID. This identifies a bridge (BN) that has a port on the local LAN and a port connected to the indicated LAN ID. This object consists of 3 octets, so that it can be easily compared with the RI fields of frames with routing information. The first octet contains the BN in the 4 least significant bits. The second octet contains the most significant octet of the LAN ID and the final octet contains the least significant 4 bits of the LAN ID in the 4 most significant bits of the octet."

SYNTAX OCTET STRING (SIZE(3))

Timeout ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"timer in 1/100 of sec"

SYNTAX INTEGER(0..65535)

--*****

-- Base DTR Concentrator Information

--*****

--***** General DTR Concentrator Information *****

dtrConcentratorAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" MAC address used by DTR Concentrator for uniqueness.

It must be unique "
 ::= { dtrConcMIBBase 1 }

dtrNumberOfCrfs OBJECT-TYPE
 SYNTAX INTEGER(1..255)
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 " Number of Concentrator Relay Functions within the DTR
 Concentrator. Min value is 1. "
 ::= { dtrConcMIBBase 2 }

dtrNumberOfBridgeRelays OBJECT-TYPE
 SYNTAX INTEGER(0|1)
 MAX-ACCESS read-write
 STATUS current
 DESCRIPTION
 " Number of Bridge Relay Functions within the DTR
 Concentrator. Value of 0 or 1 is permitted. Writing
 this object sets the number of bridge relay functions
 within the DTR Concentrator. "
 ::= { dtrConcMIBBase 3 }

--***** Concentrator Relay Function Table *****
 -- (one entry for each Concentrator Relay Function)

dtrCRFTable OBJECT-TYPE
 SYNTAX SEQUENCE OF DtrCRFEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 " This table contains information for each Concentrator
 Relay Function in the DTR Concentrator. "
 ::= { dtrConcMIBBase 6 }

dtrCRFEntry OBJECT-TYPE
 SYNTAX DtrCRFEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "Entry into the dtrCRFTable. "
 INDEX { dtrCRFIndex }
 ::= { dtrCRFTable 1 }

DtrCRFEntry ::= SEQUENCE {
 dtrCRFIndex INTEGER,
 dtrCRFNumberOfPorts INTEGER,
 dtrCRFPortMask OCTET STRING,

dtrCRFName	DisplayString,
dtrCRFMaxInfo	INTEGER,
dtrCRFMacAddress	MacAddress,
dtrCRFLocalLanId	INTEGER,
dtrCRFAdminLocalLanId	INTEGER,
dtrCRFFdbAgingTime	INTEGER,
dtrCRFMRIEnable	INTEGER,
dtrCRFLearnedEntryDiscards	Counter32,
dtrCRFRowStatus	RowStatus }

dtrCRFIndex OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The CRF number identifying this instance of CRF. "

::= { dtrCRFEntry 1 }

dtrCRFNumberOfPorts OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of CRF Ports controlled by this CRF. "

::= { dtrCRFEntry 2 }

dtrCRFPortMask OBJECT-TYPE

SYNTAX OCTET STRING

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The set of ports that are associated with this instance of a CRF. Each octet within the value of this object specifies a set of eight ports, with the first octet specifying ports 1 through 8, the second octet specifying ports 9 through 16 and so on. Within each octet, the most significant bit represents the lowest numbered port and the least significant bit represents the highest number port. Writing this variable will modify the CRF configuration and update the value contained in dtrCRFNumberOfPorts. "

::= { dtrCRFEntry 3 }

dtrCRFName OBJECT-TYPE

SYNTAX DisplayString

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The textual name of the CRF. The value of this object is the name of the CRF as assigned by the DTR Concentrator and is suitable for use in commands entered at the DTR Concentrator console. "

::= { dtrCRFEntry 4 }

dtrCRFMaxInfo OBJECT-TYPE

SYNTAX INTEGER(516..18200)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The maximum size of the INFO field the CRF can transmit/receive. "

::= { dtrCRFEntry 5 }

dtrCRFMacAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The MAC address used with the dtrCRFSpTreePriority to form the CRF Identifier used in the spanning tree protocol. This address must be unique and it is recommended this address be the specific MAC address of the lowest numbered C-Port. "

::= { dtrCRFEntry 6 }

dtrCRFLocalLanId OBJECT-TYPE

SYNTAX INTEGER(0..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" This is the value of the local lan id used by the CRF. This value may be assigned or may be learned by the CRF learning process. Valid values range from 0 to 4095. The value of 65535 indicates that the lan id value has not been assigned or learned."

::= { dtrCRFEntry 7 }

dtrCRFAdminLocalLanId OBJECT-TYPE

SYNTAX INTEGER(0..65535)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" Write to this object to assign the value of the local lan id used by the CRF. Valid values range from 0 to 4095. The value of 65535 indicates that the lan id value has not been assigned. "


```
::= { dtrCRFEntry 8 }
```

```
dtrCRFFdbAgingTime    OBJECT-TYPE
    SYNTAX              INTEGER(10..1000000)
    MAX-ACCESS           read-write
    STATUS               current
    DESCRIPTION
        " The timeout period in seconds for aging out dynamic
        entries from the Filtering Database.  Recommended default
        is 300 seconds.  "
    DEFVAL {300}
    ::= { dtrCRFEntry 9 }
```

```
dtrCRFMRIEnable       OBJECT-TYPE
    SYNTAX              INTEGER{ enable(1), disable(2) }
    MAX-ACCESS           read-write
    STATUS               current
    DESCRIPTION
        " This object enables or disables the MRI function in the
        CRF.  "
    ::= { dtrCRFEntry 10 }
```

```
dtrCRFLearnedEntryDiscards  OBJECT-TYPE
    SYNTAX              Counter32
    MAX-ACCESS           read-only
    STATUS               current
    DESCRIPTION
        " The total number of CRF Filtering Database entries,
        which have been or would have been learned, but have been
        discarded due to a lack of space to store them in the
        Filtering Database.  "
    ::= { dtrCRFEntry 11 }
```

```
dtrCRFRowStatus       OBJECT-TYPE
    SYNTAX              RowStatus
    MAX-ACCESS           Read-Create
    STATUS               current
    DESCRIPTION
        " Allows creation and deletion of CRF entries.  "
    ::= {dtrCRFEntry 12}
```

```
--***** CRF Port Table *****
```

```
dtrCRFPortTable       OBJECT-TYPE
    SYNTAX              SEQUENCE OF DtrCRFPortEntry
    MAX-ACCESS           not-accessible
```


STATUS current

DESCRIPTION

" This table contains information for each CRF Port in a
Concentrator Relay Function. "

::= { dtrConcMIBBase 7 }

dtrCRFPortEntry OBJECT-TYPE

SYNTAX DtrCRFPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entry in the CRF Port Table"

INDEX { dtrCRFPortCRFIndex,
dtrCRFPortNumber }

::= { dtrCRFPortTable 1 }

DtrCRFPortEntry ::= SEQUENCE {

dtrCRFPortCRFIndex INTEGER,

dtrCRFPortNumber INTEGER,

dtrCRFPortifIndex InterfaceIndex,

dtrCRFPortEnable INTEGER, -- enumeration

dtrCRFPortType IANAifType,

dtrCRFPortMtuExceededDiscards Counter32,

dtrCRFPortDelayExceededDiscards Counter32 }

dtrCRFPortCRFIndex OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The CRF number identifying an instance of CRF "

::= { dtrCRFPortEntry 1 }

dtrCRFPortNumber OBJECT-TYPE

SYNTAX INTEGER(1..2048)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The CRF Port number for which this entry contains CRF
management information. There is a one to one
correspondence between a bit position in the
dtrCRFPortMask and the value of a CRF Port Number. This
correspondence is defined in the description of
dtrCRFPortMask. "

::= { dtrCRFPortEntry 2 }

dtrCRFPortifIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" A unique value, greater than zero that corresponds to the interface this CRF Port is assigned (corresponds to ifIndex). Writing this object defines the correspondence between the CRF Port and the interface (C-Port or Bridge Relay Function interface as determined by dtrCRFPortType.). "

::= { dtrCRFPortEntry 3 }

dtrCRFPortEnable OBJECT-TYPE

SYNTAX INTEGER{ enable(1), disable(2) }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The enable/disable status of the CRF Port. This control can be used to disable a port. "

::= { dtrCRFPortEntry 4 }

dtrCRFPortType OBJECT-TYPE

SYNTAX IANAIfType

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" Indicates the type of interface that this CRF Port is assigned to. Only two types are permitted, a C-Port(86) and an internal bridge relay function(98). Write this object to set the type of interface. "

::= { dtrCRFPortEntry 5 }

dtrCRFPortMtuExceededDiscards OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of frames discarded by the CRF Port due to excessive size (exceeds CrfMaxInfo). "

::= { dtrCRFPortEntry 6 }

dtrCRFPortDelayExceededDiscards OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of frames discarded by the CRF Port due to excessive delay through the CRF. "

::= { dtrCRFPortEntry 7 }


```

_ _*****
-- Spanning Tree Information
_ _*****

```

```
-- General DTR Concentrator Spanning Tree information
```

```
dtrSpanningTreeHoldTime    OBJECT-TYPE
```

```
    SYNTAX                    Integer32
```

```
    MAX-ACCESS                read-only
```

```
    STATUS                    current
```

```
    DESCRIPTION
```

```
        " The minimum time period, in seconds, elapsing between
        the transmission of Configuration PDUs through a given
        port (CRFP or internal bridge).  This is a fixed
        parameter of the DTR Concentrator used by all member CRF
        and bridge entities.  Value specified by 802.1d is 1
        second.  "
```

```
 ::= { dtrConcMIBSpTree 1 }
```

```
dtrSpanningTreeProtocolSpecification    OBJECT-TYPE
```

```
    SYNTAX                    INTEGER{ unknown(1), ieee8021d(3) }
```

```
    MAX-ACCESS                read-only
```

```
    STATUS                    current
```

```
    DESCRIPTION
```

```
        " An indication of what version of the Spanning Tree
        Protocol is being run on the DTR Concentrator.  "
```

```
 ::= { dtrConcMIBSpTree 2 }
```

```
dtrSpanningTreeTimeSinceTopoChange    OBJECT-TYPE
```

```
    SYNTAX                    TimeTicks
```

```
    MAX-ACCESS                read-only
```

```
    STATUS                    current
```

```
    DESCRIPTION
```

```
        " The time (in 1/100ths of a second) since the last
        topology change was detected by the CRF or bridge
        entities within the DTR Concentrator.  "
```

```
 ::= { dtrConcMIBSpTree 3 }
```

```
dtrSpanningTreeTopologyChanges    OBJECT-TYPE
```

```
    SYNTAX                    Counter32
```

```
    MAX-ACCESS                read-only
```

```
    STATUS                    current
```

```
    DESCRIPTION
```

```
        " The total number of topology changes detected by this
        concentrator since the management entity was last reset
        or initialized.  "
```

```
 ::= { dtrConcMIBSpTree 4 }
```


dtrSpanningTreeBridgeForwardDelay OBJECT-TYPE

SYNTAX Timeout(400..3000)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The value that all spanning tree protocol entities (CRF or Bridge) use for ForwardDelay when this spanning tree protocol entity is acting as the root. The range for this parameter is related to the value of dtrSpanningTreeBridgeMaxAge. See ISO/IEC 10038:1993 and the relationship between dot1dStpBridgeMaxAge and dot1dStpBridgeForwardDelay. The granularity of this timer is specified to be 1 second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. "

::= { dtrConcMIBSpTree 5 }

dtrSpanningTreeBridgeHelloTime OBJECT-TYPE

SYNTAX Timeout(100..1000)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The value that all spanning tree protocol entities (CRF or Bridge) use for HelloTime when this spanning tree protocol entity is acting as the root. The granularity of this timer is specified to be 1 second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. "

::= { dtrConcMIBSpTree 6 }

dtrSpanningTreeBridgeMaxAge OBJECT-TYPE

SYNTAX Timeout(600..4000)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The value that all spanning tree protocol entities (CRF or Bridge) use for MaxAge when this spanning tree protocol entity is acting as the root. The range for this parameter is related to the value of dtrSpanningTreeBridgeHelloTime. See ISO/IEC 10038:1993 and the relationship between dot1dStpBridgeMaxAge and dot1dStpBridgeHelloTime. The granularity of this timer is specified to be 1 second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds."

::= { dtrConcMIBSpTree 7 }

--***** CRF Spanning tree Table *****


```

dtrCRFSpTreeTable    OBJECT-TYPE
    SYNTAX             SEQUENCE OF DtrCRFSpTreeEntry
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        " This table contains the spanning tree information for
          each CRF. "
    ::= { dtrConcMIBSpTree 9 }

```

```

dtrCRFSpTreeEntry    OBJECT-TYPE
    SYNTAX             DtrCRFSpTreeEntry
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        "Entry in the dtrCRFSpTreeTable "
    INDEX               { dtrCRFSpTreeCRFIndex }
    ::= { dtrCRFSpTreeTable 1 }

```

```

DtrCRFSpTreeEntry ::= SEQUENCE {
    dtrCRFSpTreeCRFIndex      INTEGER,
    dtrCRFSpTreePriority      INTEGER,  --(0..65535)
    dtrCRFSpTreeDesignatedRoot  BridgeId,
    dtrCRFSpTreeRootCost     Integer32,
    dtrCRFSpTreeRootPort     Integer32,
    dtrCRFSpTreeMaxAge       Timeout,  --1/100 second
    dtrCRFSpTreeHelloTime    Timeout,
    dtrCRFSpTreeForwardDelay  Timeout } --1/100 second

```

```

dtrCRFSpTreeCRFIndex  OBJECT-TYPE
    SYNTAX             INTEGER(1..255)
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        " The CRF number identifying this instance of CRF. "
    ::= { dtrCRFSpTreeEntry 1 }

```

```

dtrCRFSpTreePriority   OBJECT-TYPE
    SYNTAX             INTEGER(0..65535)
    MAX-ACCESS          read-write
    STATUS              current
    DESCRIPTION
        " The value of the write-able portion of the CRF
          Identifier (The first two octets of the CRF Identifier.
          The last 6 octets of the CRF ID are given by the value of
          dtrCRFMacAddress.). "
    ::= { dtrCRFSpTreeEntry 2 }

```

```

dtrCRFSpTreeDesignatedRoot  OBJECT-TYPE

```


SYNTAX BridgeId
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 " The bridge identifier of the root of the spanning tree
 as determined by the spanning tree protocol executed at
 this node. "
::= { dtrCRFSpTreeEntry 3 }

dtrCRFSpTreeRootCost OBJECT-TYPE
 SYNTAX Integer32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 " The cost of the path to the root as seen from this CRF."
 ::= { dtrCRFSpTreeEntry 4 }

dtrCRFSpTreeRootPort OBJECT-TYPE
 SYNTAX Integer32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 " The CRF Port number of the CRF Port which offers the
 lowest cost path from this CRF to the root. "
 ::= { dtrCRFSpTreeEntry 5 }

dtrCRFSpTreeMaxAge OBJECT-TYPE
 SYNTAX Timeout
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 " The maximum age of Spanning Tree Protocol information
 learned from the network on any port (CRF or bridge
 within the DTR Concentrator) before it is discarded.
 Units are in 1/100th of a second. This is the actual
 value currently in use. "
 ::= { dtrCRFSpTreeEntry 6 }

dtrCRFSpTreeHelloTime OBJECT-TYPE
 SYNTAX Timeout
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 " The amount of time between transmission of
 Configuration bridge PDUs used by a CRF that is
 attempting to become the Root or is the Root. This is
 the value currently in use. "
 ::= { dtrCRFSpTreeEntry 7 }

dtrCRFSpTreeForwardDelay OBJECT-TYPE

SYNTAX Timeout
 MAX-ACCESS read-only
 STATUS current

DESCRIPTION

" This time value, measured in 1/100th of a second, is used to control the amount of time spent in the Listening state when moving from the Blocking state to the Listening state and the amount of time in the Learning state when moving from the Learning state to the Forwarding state. This time value is used for aging dynamic entries in the Filtering Database while the Topology Change flag is set in protocol messages received from the root. This is the value the CRF is currently using. "

::= { dtrCRFSpTreeEntry 8 }

-- ***** Port Spanning Tree *****

dtrCRFPortSpTreeTable OBJECT-TYPE

SYNTAX SEQUENCE OF DtrCRFPortSpTreeEntry
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

" This table contains spanning tree information for each CRF Port."

::= { dtrConcMIBSpTree 10 }

dtrCRFPortSpTreeEntry OBJECT-TYPE

SYNTAX DtrCRFPortSpTreeEntry
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

" Entry in the dtrCRFPortSpTreeTable "

INDEX { dtrCRFPortSpTreeCRFIndex,
 dtrCRFPortSpTreeNumber }

::= { dtrCRFPortSpTreeTable 1 }

DtrCRFPortSpTreeEntry ::= SEQUENCE {

dtrCRFPortSpTreeCRFIndex	INTEGER,
dtrCRFPortSpTreeNumber	INTEGER,
dtrCRFPortSpTreePriority	INTEGER, --(0..255)
dtrCRFPortSpTreeState	INTEGER, -- enumerated
dtrCRFPortSpTreePathCost	INTEGER, --(1..65535)
dtrCRFPortSpTreeDesignatedRoot	BridgeId,
dtrCRFPortSpTreeDesignatedCost	Integer32,
dtrCRFPortSpTreeDesignatedBridge	BridgeId,
dtrCRFPortSpTreeDesignatedPort	OCTET STRING (SIZE(2)),

dtrCRFPortSpTreeForwardTransitions Counter32 }

dtrCRFPortSpTreeCRFIndex OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

 " The CRF number identifying this instance of CRF. "

::= { dtrCRFPortSpTreeEntry 1 }

dtrCRFPortSpTreeNumber OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

 " The CRF Port number for which this entry contains CRF
 management information. "

::= { dtrCRFPortSpTreeEntry 2 }

dtrCRFPortSpTreePriority OBJECT-TYPE

SYNTAX INTEGER(0..255)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

 " The value of the priority field is contained in the
 first byte of the CRF Port Identifier. The second byte
 of the CRF Port Identifier is given by the value of CRF
 Port as identified by dtrCRFPortSpTreeNumber. "

::= { dtrCRFPortSpTreeEntry 3 }

dtrCRFPortSpTreeState OBJECT-TYPE

SYNTAX INTEGER{ disabled(1), blocking(2),
 listening(3), learning(4),
 forwarding(5), broken(6) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

 " The CRF Port state as defined by the operation of the
 Spanning Tree Protocol. If the DTR concentrator detects
 a malfunctioning port , then it places that port into the
 broken(6) state. The CRF Port states are defined as:
 disabled(1), blocking(2), listening(3), learning(4),
 forwarding(5), and broken(6). "

::= { dtrCRFPortSpTreeEntry 4 }

dtrCRFPortSpTreePathCost OBJECT-TYPE

SYNTAX INTEGER(1..65535)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

" The contribution of the path through this CRF Port to the total cost of the path to the Root for this CRF. The path is identified by dtrCRFPortSpTreeNumber when the CRF Port is the Root Port. "

::= { dtrCRFPortSpTreeEntry 5 }

dtrCRFPortSpTreeDesignatedRoot OBJECT-TYPE

SYNTAX BridgeId

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The unique bridge identifier of the bridge recorded as the Root in the root identifier parameter of the Configuration PDUs transmitted by the designated bridge for the LAN to which the CRF Port is attached. "

::= { dtrCRFPortSpTreeEntry 6 }

dtrCRFPortSpTreeDesignatedCost OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The cost of the path to the Root offered by the Designated Port on the LAN to which this CRF Port is attached. "

::= { dtrCRFPortSpTreeEntry 7 }

dtrCRFPortSpTreeDesignatedBridge OBJECT-TYPE

SYNTAX BridgeId

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The unique Bridge or CRF Identifier of the Bridge or CRF considered to be the Designated Bridge for the LAN associated with the CRF Port. "

::= { dtrCRFPortSpTreeEntry 8 }

dtrCRFPortSpTreeDesignatedPort OBJECT-TYPE

SYNTAX OCTET STRING (SIZE(2))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The Port Identifier of the Bridge or CRF port believed to be the Designated Port for the LAN associated with the CRF Port "


```
::= { dtrCRFPortSpTreeEntry 9 }
```

```
dtrCRFPortSpTreeForwardTransitions  OBJECT-TYPE
```

```
    SYNTAX          Counter32
```

```
    MAX-ACCESS      read-only
```

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        " The number of times this CRF Port, as identified by
        dtrCRFPortSpTreeNumber, has made a transition from the
        Learning state to the Forwarding State. "
```

```
::= { dtrCRFPortSpTreeEntry 10 }
```

```
-- *****
-- CRF Forwarding Information
-- *****
```

```
-- The data contained within the filtering database tables is
-- affected by actions to configure the CRF.
```

```
-- When a CRF is modified, such as;
```

```
-- 1. CRF Ports are added or deleted, or
-- 2. Moved (change of correspondence to the ifIndex)
```

```
-- entries in dtrFdbDynamicAddrTable and dtrFdbDynamicRDTable
-- which correspond to the CRF are marked invalid and flushed
-- from the table.
```

```
-- When a CRF is destroyed, entries in dtrFdbDynamicAddrTable,
-- dtrFdbDynamicRDTable, dtrFdbStaticAddrTable, and
-- dtrFdbStaticRDTable which correspond to the CRF, are marked
-- invalid and flushed from the table.
```

```
-- ***** Dynamic Address Filtering Database Table *****
```

```
dtrFdbDynamicAddrTable  OBJECT-TYPE
```

```
    SYNTAX          SEQUENCE OF DtrFdbDynamicAddrEntry
```

```
    MAX-ACCESS      not-accessible
```

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        " This table contains information about specific dynamic
        MAC address entries in the CRF Filtering Database."
```

```
::= { dtrConcMIBForwarding 1 }
```

```
dtrFdbDynamicAddrEntry  OBJECT-TYPE
```

```
    SYNTAX          DtrFdbDynamicAddrEntry
```

```
    MAX-ACCESS      not-accessible
```

```
    STATUS          current
```


DESCRIPTION

" CRF Filtering Database Dynamic MAC address entry. "

INDEX { dtrFdbDynamicAddrCRFIndex,
dtrFdbDynamicAddrStnAddress }

::= { dtrFdbDynamicAddrTable 1 }

dtrFdbDynamicAddrEntry ::= SEQUENCE {
dtrFdbDynamicAddrCRFIndex INTEGER,
dtrFdbDynamicAddrStnAddress MacAddress,
dtrFdbDynamicAddrPortNumber INTEGER,
dtrFdbDynamicAddrStatus DynamicAddrFdbStatus }

dtrFdbDynamicAddrCRFIndex OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The CRF number identifying this instance of CRF. "

::= { dtrFdbDynamicAddrEntry 1 }

dtrFdbDynamicAddrStnAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" A unicast MAC address for which the CRF has forwarding information. This object is updated by the Learning Process in the CRF. "

::= { dtrFdbDynamicAddrEntry 2 }

dtrFdbDynamicAddrPortNumber OBJECT-TYPE

SYNTAX INTEGER(0..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The CRF Port number of the CRF Port that a frame with an address matching dtrFdbDynamicAddrStnAddress in this dtrFdbDynamicAddrTable Entry has been seen. A value of zero is assigned when dtrFdbDynamicAddrStnAddress is known, but the CRF Port number (dtrFdbDynamicAddrPortNumber) has not been learned. "

::= { dtrFdbDynamicAddrEntry 3 }

dtrFdbDynamicAddrStatus OBJECT-TYPE

SYNTAX DynamicAddrFdbStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" Status of this entry.

other(1) indicates some other MIB object (not the corresponding instance of dtrFdbDynamicAddrPortNumber, nor an entry in the dtrFdbStaticAddrTable) is being used to determine if and how frames addressed to the value of the corresponding instance of dtrFdbDynamicAddrStnAddress are forwarded.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table.

learned(3) indicates dtrFdbDynamicAddrPortNumber for this entry was learned, and is being used.

self(4) indicates this instance of dtrFdbDynamicAddrStnAddress represents one of the CRF Addresses. The corresponding instance of dtrFdbDynamicPortNumber's indicates which CRF Port has this address.

mgmt(5) indicates the corresponding instance of dtrFdbDynamicAddrStnAddress is also a value of an existing DtrFdbStaticAddrStnAddress. "

::= { dtrFdbDynamicAddrEntry 4 }

--***** Static Address Filtering Database Table *****

dtrFdbStaticAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF DtrFdbStaticAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" This table contains information about specific static MAC address entries in the CRF Filtering Database. "

::= { dtrConcMIBForwarding 2 }

dtrFdbStaticAddrEntry OBJECT-TYPE

SYNTAX DtrFdbStaticAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" CRF Filtering Database Static MAC Address Entry. "

INDEX { dtrFdbStaticAddrCRFIndex,
dtrFdbStaticAddrStnAddress }

::= { dtrFdbStaticAddrTable 1 }

DtrFdbStaticAddrEntry ::= SEQUENCE {

dtrFdbStaticAddrCRFIndex	INTEGER,
dtrFdbStaticAddrStnAddress	MacAddress,
dtrFdbStaticAddrRowStatus	RowStatus,
dtrFdbStaticAddrInMask	OCTET STRING,
dtrFdbStaticAddrOutMask	OCTET STRING,
dtrFdbStaticAddrStatus	StaticFdbStatus }

dtrFdbStaticAddrCRFIndex OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The CRF number identifying this instance of CRF. "

::= { dtrFdbStaticAddrEntry 1 }

dtrFdbStaticAddrStnAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

" The destination MAC address in a frame to which this entry's filtering information applies. This object can take the value of a group or broadcast address. "

::= { dtrFdbStaticAddrEntry 2 }

dtrFdbStaticAddrRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" Allows creation and deletion of static entries. "

::= { dtrFdbStaticAddrEntry 3 }

dtrFdbStaticAddrInMask OBJECT-TYPE

SYNTAX OCTET STRING

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" The set of CRF Ports receiving frames with a destination address matching the address specified by the DtrFdbStaticAddrStnAddress in this entry which may forward this frame to any output CRF Port indicated by DtrFdbStaticAddrOutMask. Each octet within the value of this object specifies a set of eight ports, with the first octet specifying CRF Ports 1 through 8, the second octet specifying CRF Ports 9 through 16 and so on. Within each octet, the most significant bit represents the lowest numbered port, and the least significant bit

represents the highest numbered port. The default value of this object is a string of ones of appropriate length.
"

::= { dtrFdbStaticAddrEntry 4 }

dtrFdbStaticAddrOutMask OBJECT-TYPE

SYNTAX OCTET STRING

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" The set of CRF Ports to which frames with a destination address matching the address specified by the DtrFdbStaticAddrStnAddress in this entry may be forwarded to. Each octet within the value of this object specifies a set of eight ports, with the first octet specifying CRF Ports 1 through 8, the second octet specifying CRF Ports 9 through 16 and so on. Within each octet, the most significant bit represents the lowest numbered port, and the least significant bit represents the highest numbered port. The default value of this object is a string of ones of appropriate length. "

::= { dtrFdbStaticAddrEntry 5 }

dtrFdbStaticAddrStatus OBJECT-TYPE

SYNTAX StaticFdbStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" Status of this entry.

other(1) indicates this entry is currently in use under conditions different from the available status definitions that follow.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table. Writing this value to the object removes the entry.

permanent(3) indicates that the entry is currently in use and will remain so after the next reset.

deleteOnReset(4) indicates the entry is currently in use and will remain so until the next reset. "

::= { dtrFdbStaticAddrEntry 6 }

```
-- *****
-- Dynamic Destination Route Descriptor Filtering Database Table
-- *****
```



```

dtrFdbDynamicRDTable    OBJECT-TYPE
    SYNTAX                SEQUENCE OF DtrFdbDynamicRDEntry
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        " This table contains information about a specific
        dynamic route descriptor entry in the CRF Filtering
        Database. "
    ::= { dtrConcMIBForwarding 3 }

```

```

dtrFdbDynamicRDEntry    OBJECT-TYPE
    SYNTAX                DtrFdbDynamicRDEntry
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        " "
    INDEX                 { dtrFdbDynamicRDCRFIndex,
                           dtrFdbDynamicRDRouteDesc }
    ::= { dtrFdbDynamicRDTable 1 }

```

```

DtrFdbDynamicRDEntry ::= SEQUENCE {
    dtrFdbDynamicRDCRFIndex    INTEGER,
    dtrFdbDynamicRDRouteDesc   DestinationRouteDescriptor,
    dtrFdbDynamicRDPortNumber  INTEGER,
    dtrFdbDynamicRDStatus      DynamicRDFdbStatus }

```

```

dtrFdbDynamicRDCRFIndex OBJECT-TYPE
    SYNTAX                INTEGER(1..255)
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        " The CRF number identifying this instance of CRF. "
    ::= { dtrFdbDynamicRDEntry 1 }

```

```

dtrFdbDynamicRDRouteDesc OBJECT-TYPE
    SYNTAX                DestinationRouteDescriptor
    MAX-ACCESS            not-accessible
    STATUS                current
    DESCRIPTION
        " A Destination Route Descriptor for which the CRF has
        forwarding information. The Destination Route Descriptor
        (DRD) consists of 2 parts; a 4 bit Bridge Number and a 12
        bit LAN ID. This identifies a bridge (BN) which has a
        port on the local LAN and a port connected to the
        indicated LAN ID. This object consists of 3 octets so
        that it can be easily compared with the RI fields of
        frames with routing information. The first octet
        contains the BN in the 4 least significant bits. The

```


second octet contains the most significant octet of the LAN ID and the final octet contains the least significant 4 bits of the LAN ID in the 4 most significant bits of the octet. "

::= { dtrFdbDynamicRDEntry 2 }

dtrFdbDynamicRDPortNumber OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The CRF Port number of the CRF Port on which a frame with a Destination Route Descriptor matching dtrFdbDynamicRDRouteDesc in this DtrFdbDynamicRDEntry has been seen. A value of zero is assigned when dtrFdbDynamicRDRouteDesc is known, but the CRF Port number has not been learned. "

::= { dtrFdbDynamicRDEntry 3 }

dtrFdbDynamicRDStatus OBJECT-TYPE

SYNTAX DynamicRDFdbStatus

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" Status of this entry.

other(1) this includes the case where some other MIB object is being used to determine how/if a frame containing this Destination Route Descriptor is forwarded.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table.

learned(3) indicates dtrFdbDynamicRDPortNumber for this entry was learned.

internalBridgeRelayFunction(4) indicates dtrFdbDynamicRDRouteDesc represents a relay across the Bridge Relay Function of this DTR Concentrator.

mgmt(5) indicates dtrFdbDynamicRDRouteDesc is also a value of an existing dtrFdbStaticRDRouteDesc in the dtrFdbStaticRDTable."

::= { dtrFdbDynamicRDEntry 4 }

-- *****

-- Static Destination Route Descriptor Filtering Database Table

__*****

```

dtrFdbStaticRDTable    OBJECT-TYPE
    SYNTAX              SEQUENCE OF DtrFdbStaticRDEntry
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        "A table containing information about specific static
        route descriptor entries in the CRF Filtering Database."
    ::= { dtrConcMIBForwarding 5 }

dtrFdbStaticRDEntry    OBJECT-TYPE
    SYNTAX              DtrFdbStaticRDEntry
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        "      "
    INDEX               { dtrFdbStaticRDCRFIndex,
                          dtrFdbStaticRDRouteDesc }
    ::= { dtrFdbStaticRDTable 1 }

DtrFdbStaticRDEntry    ::= SEQUENCE {
    dtrFdbStaticRDCRFIndex      INTEGER,
    dtrFdbStaticRDRouteDesc    DestinationRouteDescriptor,
    dtrFdbStaticRDRowStatus    RowStatus,
    dtrFdbStaticRDPortNumber    INTEGER,
    dtrFdbStaticRDStatus       StaticFdbStatus }

dtrFdbStaticRDCRFIndex  OBJECT-TYPE
    SYNTAX              INTEGER(1..255)
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        " The CRF number identifying this instance of CRF. "
    ::= { dtrFdbStaticRDEntry 1 }

dtrFdbStaticRDRouteDesc OBJECT-TYPE
    SYNTAX              DestinationRouteDescriptor
    MAX-ACCESS          not-accessible
    STATUS              current
    DESCRIPTION
        " Static Entries containing Destination Route Descriptor
        information for internal Bridge Ports. These entries are
        added as part of the initialization of the DTR
        Concentrator when an internal Bridge Relay Function is
        enabled (dtrOperNumberOfBridgeRelays=1).

        The Destination Route Descriptor (DRD) consists of 2

```


parts; a 4 bit Bridge Number and a 12 bit LAN ID. This identifies a bridge (BN) that has a port on the local LAN and a port connected to the indicated LAN ID. This object consists of 3 octets so that it can be easily compared with the RI fields of frames with routing information. The first octet contains the BN in the 4 least significant bits. The second octet contains the most significant octet of the LAN ID and the final octet contains the least significant 4 bits of the LAN ID in the 4 most significant bits of the octet. "

::= { dtrFdbStaticRDEntry 2 }

dtrFdbStaticRDRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Allows creation and deletion of static entries"

::= { dtrFdbStaticRDEntry 3 }

dtrFdbStaticRDPortNumber OBJECT-TYPE

SYNTAX INTEGER(1..255)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

" The CRF Port number of the CRF Port on which a frame with a Destination Route Descriptor matching dtrFdbStaticRDRouteDesc in this DtrFdbStaticRDEntry is forwarded. "

::= { dtrFdbStaticRDEntry 4 }

dtrFdbStaticRDStatus OBJECT-TYPE

SYNTAX StaticFdbStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Status of this entry.

other(1) indicates this entry is currently in use under conditions different from the available status definitions that follow.

invalid(2) indicates this entry is no longer valid, but has not been flushed from the table. Writing this value to the object removes the entry.

permanent(3) indicates the entry is currently in use

and will remain so after the next reset.

deleteOnReset(4) indicates the entry is currently in use and will remain so until the next reset. "

::= { dtrFdbStaticRDEntry 5 }

```
-- *****
-- MRI Information
-- *****

-- ***** MRI Table *****
```

```
dtrMRITable    OBJECT-TYPE
    SYNTAX      SEQUENCE OF DtrMRIEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " This table contains information about the CRF port out
          mask for specific management functions. "
    ::= { dtrConcMIBMRI 1 }
```

```
dtrMRIEntry    OBJECT-TYPE
    SYNTAX      DtrMRIEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " Entry into dtrMRITable "
    INDEX       { dtrMRICRFIndex,
                  dtrMRIMgmtType }
    ::= { dtrMRITable 1 }
```

```
DtrMRIEntry ::= SEQUENCE {
    dtrMRICRFIndex  INTEGER,
    dtrMRIMgmtType  INTEGER,
    dtrMRIOutMask   OCTET STRING }
```

```
dtrMRICRFIndex OBJECT-TYPE
    SYNTAX      INTEGER(1..255)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " The CRF number identifying this instance of CRF. "
    ::= { dtrMRIEntry 1 }
```

```
dtrMRIMgmtType OBJECT-TYPE
    SYNTAX      INTEGER(0..15)
    MAX-ACCESS   not-accessible
    STATUS      current
```


DESCRIPTION

" Identifies the function class for this entry. The MRI forwards frames with a destination class equal to dtrMRIMgmtType using the corresponding mask entry (dtrMRIOutMask). When the destination class is 0 and the source class is not 0, the destination address in the MAC frame is used to forward the frame. MAC frames with a destination class not found in this table are not forwarded by the MRI. "

```
::= { dtrMRIEntry 2 }
```

```
dtrMRIOutMask    OBJECT-TYPE
    SYNTAX        OCTET STRING
    MAX-ACCESS    read-write
    STATUS        current
```

DESCRIPTION

" The set of CRF Ports to which frames with a destination class matching the function class specified by the dtrMRIMgmtType in this entry may be forwarded to. Each octet within the value of this object specifies a set of eight ports, with the first octet specifying CRF Ports 1 through 8, the second octet specifying CRF Ports 9 through 16 and so on. Within each octet, the most significant bit represents the lowest numbered port, and the least significant bit represents the highest numbered port. "

```
::= { dtrMRIEntry 3 }
```

```
-- *****
-- Statistics Information
-- *****

-- ***** CRF Port Statistics Information *****
```

```
dtrCRFPortStatsTable  OBJECT-TYPE
    SYNTAX        SEQUENCE OF DtrCRFPortStatsEntry
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
        " This table contains the counters for each CRF Port. "
    ::= { dtrConcMIBStats 1 }
```

```
dtrCRFPortStatsEntry  OBJECT-TYPE
    SYNTAX        DtrCRFPortStatsEntry
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
```



```

    " Entry into the CRFPortStatsTable. "
INDEX          { dtrCRFPortStatsCRFIndex,
                  dtrCRFPortStatsPortNumber }
 ::= { dtrCRFPortStatsTable 1 }

```

```

DtrCRFPortStatsEntry ::= SEQUENCE {
    dtrCRFPortStatsCRFIndex      INTEGER,
    dtrCRFPortStatsPortNumber    INTEGER,
    dtrCRFPortStatsAreInFrames   Counter32,
    dtrCRFPortStatsAreOutFrames  Counter32,
    dtrCRFPortStatsInFrames      Counter32,
    dtrCRFPortStatsOutFrames     Counter32,
    dtrCRFPortStatsSrfInFrames   Counter32,
    dtrCRFPortStatsSrfOutFrames  Counter32,
    dtrCRFPortStatsSteInFrames   Counter32,
    dtrCRFPortStatsSteOutFrames  Counter32,
    dtrCRFPortStatsInvalidRI     Counter32,
    dtrCRFPortStatsInMisdirected Counter32,
    dtrCRFPortStatsInDiscards    Counter32 }

```

```

dtrCRFPortStatsCRFIndex  OBJECT-TYPE
    SYNTAX      INTEGER(1..255)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " The CRF number identifying this instance of CRF. "
    ::= { dtrCRFPortStatsEntry 1 }

```

```

dtrCRFPortStatsPortNumber  OBJECT-TYPE
    SYNTAX      INTEGER(1..255)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        " The CRF Port number for which this entry contains CRF
        management information. "
    ::= { dtrCRFPortStatsEntry 2 }

```

```

dtrCRFPortStatsAreInFrames  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        " The number of ARE frames received at this CRF Port.
        This count does not include ARE frames which have been
        misdirected (final Lan Id does not match the local Lan Id
        maintained by the CRF (dtrCRFLocalLanId)). "
    ::= { dtrCRFPortStatsEntry 3 }

```


dtrCRFPortStatsAreOutFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of ARE frames transmitted by this CRF Port.
This count does not include ARE frames which have been
misdirected (final Lan Id does not match the Local Lan Id
maintained by the CRF (dtrCRFLocalLanId)). "

::= { dtrCRFPortStatsEntry 4 }

dtrCRFPortStatsInFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of valid frames received by this CRF Port."

::= { dtrCRFPortStatsEntry 5 }

dtrCRFPortStatsOutFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of frames transmitted by this CRF Port. "

::= { dtrCRFPortStatsEntry 6 }

dtrCRFPortStatsSrfInFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of SRF frames received by this CRF Port and
forwarded to another port on the CRF."

::= { dtrCRFPortStatsEntry 7 }

dtrCRFPortStatsSrfOutFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of SRF frames transmitted by this CRF Port. "

::= { dtrCRFPortStatsEntry 8 }

dtrCRFPortStatsSteInFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

" The number of STE frames received at this CRF Port.
This count does not include STE frames which have been
misdirected (final Lan Id does not match the local Lan Id
maintained by the CRF (dtrCRFLocalLanId)). "

::= { dtrCRFPortStatsEntry 9 }

dtrCRFPortStatsSteOutFrames OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

" The number of STE frames transmitted by this CRF Port.
This count does not include STE frames which have been
misdirected (final Lan Id does not match the local Lan Id
maintained by the CRF (dtrCRFLocalLanId)). "

::= { dtrCRFPortStatsEntry 10 }

dtrCRFPortStatsInvalidRI OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

" The number of frames discarded due to a formatting
error (i.e., an odd RI length, or 0 RI length) (Reference
ISO/IEC 10038:1993 C4.2.1.1.3). "

::= { dtrCRFPortStatsEntry 11 }

dtrCRFPortStatsInMisdirected OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

" The number of source routed frames received at this CRF
Port where the local Lan Id (dtrCRFLocalLanId) is not
present or is not last (explorer frame). Explorer frames
(ARE and STE) are broadcast to all Forwarding CRF Ports.
SRF frames are discarded if the DA is specific and they
are broadcast if the DA is multicast. "

::= { dtrCRFPortStatsEntry 12 }

dtrCRFPortStatsInDiscards OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

" The number of frames discarded by the Forwarding
Process. This count may include frames that are


```
discarded by the Frame Reception process. "
 ::= { dtrCRFPortStatsEntry 13 }
```

```
-- *****
-- Conformance information
-- *****
```

```
dtrConcConformance OBJECT IDENTIFIER ::= { dtrConcMIB 2 }
dtrConcCompliances OBJECT IDENTIFIER ::= { dtrConcConformance 1 }
dtrConcGroups      OBJECT IDENTIFIER ::= { dtrConcConformance 2 }
```

```
-- Compliance statements
```

```
dtrConcCompliance    MODULE-COMPLIANCE
  STATUS              current
  DESCRIPTION
    " The compliance statement for the SNMPv2 entities which
      implement the dtrConc MIB."
```

```
MODULE -- this module
MANDATORY-GROUPS { dtrConcBaseGroup }
```

```
-- Optional groups
```

```
GROUP    dtrConcSpanningTreeGroup
DESCRIPTION
  " Implementation of this group is optional. "
```

```
GROUP    dtrConcFdbDynamicAddrGroup
DESCRIPTION
  " Implementation of this group is optional. "
```

```
GROUP    dtrConcFdbStaticAddrGroup
DESCRIPTION
  " Implementation of this group is optional. "
```

```
GROUP    dtrConcFdbDynamicRDGroup
DESCRIPTION
  " Implementation of this group is optional. "
```

```
GROUP    dtrConcFdbStaticRDGroup
DESCRIPTION
  " Implementation of this group is optional. "
```

```
GROUP    dtrConcMRIGroup
DESCRIPTION
  " Implementation of this group is optional. "
```



```
GROUP    dtrConcCRFPortStatsGroup
DESCRIPTION
    " Implementation of this group is optional. "

-- Refined OBJECT requirements

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

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

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

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

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

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

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

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

OBJECT    dtrFdbStaticAddrRowStatus
```



```
SYNTAX  INTEGER { active(1) }
MIN-ACCESS      read-only
DESCRIPTION
    " Write access is not required and only one of the six
      enumerated values for the RowStatus textual convention
      need be supported, specifically active(1). "
```

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

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

```
OBJECT  dtrFdbStaticRDRowStatus
SYNTAX  INTEGER { active(1) }
MIN-ACCESS      read-only
DESCRIPTION
    " Write access is not required and only one of the six
      enumerated values for the RowStatus textual convention
      need be supported, specifically active(1). "
```

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

```
::= { dtrConcCompliances 1 }
```

```
-- Units of conformance
```

```
dtrConcBaseGroup  OBJECT-GROUP
  OBJECTS { dtrConcentratorAddress, dtrNumberOfCrfs,
            dtrNumberOfBridgeRelays, dtrCRFNumberOfPorts,
            dtrCRFPortMask, dtrCRFName, dtrCRFMaxInfo,
            dtrCRFMacAddress, dtrCRFLocalLanId,
            dtrCRFAdminLocalLanId, dtrCRFFdbAgingTime,
            dtrCRFMRIEnable, dtrCRFLearnedEntryDiscards,
            dtrCRFRowStatus,
            dtrCRFPortEnable, dtrCRFPortType, dtrCRFPortifIndex,
            dtrCRFPortMtuExceededDiscards,
            dtrCRFPortDelayExceededDiscards }
  STATUS  current
  DESCRIPTION
    " A collection of objects providing information about the
```



```
DTR concentrator. "  
 ::= { dtrConcGroups 1 }
```

```
dtrConcSpanningTreeGroup  OBJECT-GROUP  
  OBJECTS   { dtrSpanningTreeHoldTime,  
               dtrSpanningTreeProtocolSpecification,  
               dtrSpanningTreeTimeSinceTopoChange,  
               dtrSpanningTreeTopologyChanges,  
               dtrSpanningTreeBridgeForwardDelay,  
               dtrSpanningTreeBridgeHelloTime,  
               dtrSpanningTreeBridgeMaxAge,  
               dtrCRFSpTreePriority, dtrCRFSpTreeDesignatedRoot,  
               dtrCRFSpTreeRootCost, dtrCRFSpTreeRootPort,  
               dtrCRFSpTreeMaxAge,  
               dtrCRFSpTreeHelloTime, dtrCRFSpTreeForwardDelay,  
               dtrCRFPortSpTreePriority, dtrCRFPortSpTreeState,  
               dtrCRFPortSpTreePathCost,  
               dtrCRFPortSpTreeDesignatedRoot,  
               dtrCRFPortSpTreeDesignatedCost,  
               dtrCRFPortSpTreeDesignatedBridge,  
               dtrCRFPortSpTreeDesignatedPort,  
               dtrCRFPortSpTreeForwardTransitions }  
  STATUS    current  
  DESCRIPTION  
    " A collection of objects providing information on the  
    spanning tree operation of a DTR Concentrator. "  
  ::= { dtrConcGroups 2 }
```

```
dtrConcFdbDynamicAddrGroup  OBJECT-GROUP  
  OBJECTS   { dtrFdbDynamicAddrPortNumber,  
               dtrFdbDynamicAddrStatus}  
  STATUS    current  
  DESCRIPTION  
    " A collection of objects providing information about  
    dynamic MAC address entries in the CRF Filtering Database. "  
  ::= { dtrConcGroups 3 }
```

```
dtrConcFdbStaticAddrGroup  OBJECT-GROUP  
  OBJECTS   { dtrFdbStaticAddrRowStatus, dtrFdbStaticAddrInMask,  
               dtrFdbStaticAddrOutMask, dtrFdbStaticAddrStatus }  
  STATUS    current  
  DESCRIPTION  
    " A collection of objects providing information about  
    static MAC address entries in the CRF Filtering Database. "  
  ::= { dtrConcGroups 4 }
```

```
dtrConcFdbDynamicRDGroup  OBJECT-GROUP  
  OBJECTS   { dtrFdbDynamicRDPortNumber, dtrFdbDynamicRDStatus }
```


STATUS current

DESCRIPTION

" A collection of objects providing information about
dynamic Destination Route Descriptors in the CRF

Filtering Database. "

::= { dtrConcGroups 5 }

dtrConcFdbStaticRDGroup OBJECT-GROUP

OBJECTS { dtrFdbStaticRDRowStatus,
dtrFdbStaticRDPortNumber, dtrFdbStaticRDStatus }

STATUS current

DESCRIPTION

" A collection of objects providing information about
dynamic Destination Route Descriptors in the CRF

Filtering Database. "

::= { dtrConcGroups 6 }

dtrConcMRIGroup OBJECT-GROUP

OBJECTS { dtrMRIOutMask }

STATUS current

DESCRIPTION

" A collection of objects providing information on the
CRF port out mask for specific management functions. "

::= { dtrConcGroups 7 }

dtrConcCRFPortStatsGroup OBJECT-GROUP

OBJECTS { dtrCRFPortStatsAreInFrames,
dtrCRFPortStatsAreOutFrames,
dtrCRFPortStatsInFrames,
dtrCRFPortStatsOutFrames,
dtrCRFPortStatsSrfInFrames,
dtrCRFPortStatsSrfOutFrames,
dtrCRFPortStatsSteInFrames,
dtrCRFPortStatsSteOutFrames,
dtrCRFPortStatsInvalidRI,
dtrCRFPortStatsInMisdirected,
dtrCRFPortStatsInDiscards }

STATUS current

DESCRIPTION

" A collection of objects providing protocol
characteristics for a DTR C-Port. "

::= { dtrConcGroups 8 }

END

