

Frame Relay Switched PVC MIB

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This draft document will be submitted to the RFC editor as a stand-alone SNMP MIB. Please send comments to the author, copying frs-mib@newbridge.com. It expires May 1999.

2. Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP- based internets. In particular, it defines objects for managing Frame Relay Switched Permanent Virtual Circuits (SPVCs). This memo does not specify a standard for the Internet community.

3. The SNMPv2 Network Management Framework

The major components of the SNMPv2 Network Management framework are described in the documents listed below.

- o [RFC 1902](#) [[2](#)] defines the Structure of Management

Information (SMI), the mechanisms used for describing and naming objects for the purpose of management.

- o STD 17, [RFC 1213](#) [3] defines MIB-II, the core set of managed objects (MO) for the Internet suite of protocols.
- o [RFC 1905](#) [4] defines the protocol used for network access to managed objects.
- o [RFC 1604](#) [1] defines the protocol used for managing Frame Relay services.

The framework is adaptable/extensible by defining new MIBs to suit the requirements of specific applications/protocols/situations.

Managed objects are accessed via a virtual information store, the 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 type is named by an OBJECT IDENTIFIER, which is 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, often a textual string, termed the descriptor, is used to refer to the object type.

[4.](#) Overview

This MIB addresses the instances needed to manage the Frame Relay Forum's Implementation Agreement for SPVCs (FRF.10). These instances are based on the ATM Forum Soft PVC MIB [5] objects to provide a consistent Switched PVC management model for both ATM and Frame Relay SPVCs.

A Switched PVC (SPVC) is a virtual circuit that appears to the user to be a PVC but spans multiple networks as an SVC. The originating network "ingress" endpoint is configured as one PVC endpoint and is configured with information (including a destination address) required to signal and establish an SVC across the NNI interfaces between networks. The destination network "egress" endpoint is configured as the second PVC endpoint and is configured with the destination address. The originating endpoint has the responsibility for establishing, releasing, and re-establishing the SPVC.

[4.1.](#) Originating Endpoint

In order to configure the originating endpoint SPVC parameters, an entry in the PVC End-Point table and an entry in the Switched PVC table must be defined. The PVC End-Point table entry (see the PVC

Coutts

Expires May 13, 1999

[Page 2]

End-Point Group in [RFC 1604 \[1\]](#)) identifies the bi-directional traffic parameters for the originating endpoint of the SPVC. The Switched PVC table entry (defined in this SPVC MIB) identifies the destination address information (e.g., E.164 address) of the SPVC. Together these two entries provide the information required (by the network originating the SPVC) to signal an SVC across the NNI.

A row in the PVC End-Point table must be created prior to creating a row in the Switched PVC table. And the corresponding row in the PVC End-Point table must be active prior to activating the Switched PVC table row. When the Switched PVC table row is made active, an attempt is made to set up a switched connection to an interface at the destination switch.

Presently, the Frame Relay Service MIB ([RFC 1604 \[1\]](#)) does not include an SVC cross-connect table. Once such a table is defined, an SVC cross-connect table entry should be created at the time the SPVC table row is made active; and deleted at the time the SPVC table row is made inactive.

[4.2.](#) Terminating Endpoint

The Switched PVC Address Table (defined in this SPVC MIB) is used to configure one or more addresses for each SPVC terminating endpoint interface.

In order to configure the terminating endpoint PVC parameters (e.g., terminating endpoint DLCI), an entry in the PVC End-Point table (see the PVC End-Point Group in [RFC 1604 \[1\]](#)) may be defined prior to the arrival of the Setup request.

[4.3.](#) Asymmetric and Symmetric SPVC Establishment

The configuration of an originating SPVC endpoint and a terminating SPVC endpoint defines an "asymmetric" SPVC: only one of the two SPVC endpoints has the capability to originate the SPVC. FRF.10 also requires the capability to originate the SPVC from both of the SPVC endpoints ("symmetric" SPVC establishment).

Configuration of the symmetric SPVC establishment case is accomplished by provisioning two asymmetric configurations (with the roles of originating endpoint and terminating endpoint reversed for one of the configurations). The MIB defined herein will highlight differences between the asymmetric and symmetric cases where necessary.

See FRF.10 for symmetric establishment procedures including handling of "call collisions". For instance, FRF.10 indicates that only the

"specificDlci" or "specificSpvcCorrelator" target select type may be used for symmetric establishment. (This is because the call collision would not be detectable for the "anyDlci" target select type.)

4.4. FR/ATM SPVC Interworking

This SPVC MIB also includes objects for performing FR/ATM service interworking. The originating network "ingress" FR endpoint defined in this MIB can select an ATM VPI/VCI for the target destination. The originating endpoint can also select whether multiprotocol encapsulation translation between [RFC 1490](#) and [RFC 1483](#) is required.

5. Definitions

FR-SWITCHED-PVC-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, Gauge32,
Integer32 FROM SNMPv2-SMI
TEXTUAL-CONVENTION, NOTIFICATION-TYPE,
TruthValue, TimeStamp, RowStatus FROM SNMPv2-TC
OBJECT-GROUP FROM SNMPv2-CONF
ifIndex FROM [RFC-1213](#)

frSwitchedPvcMIB MODULE-IDENTITY

LAST-UPDATED "9003010000Z"
ORGANIZATION "IETF TBD Working Group"
CONTACT-INFO
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frSwitchedPvcMIBObjects OBJECT IDENTIFIER ::= { frSwitchedPvcMIB 1 }

frSwitchedPvcMIBTraps OBJECT IDENTIFIER ::= { frSwitchedPvcMIB 2 }

FrSwitchedPvcAddrPlan ::= TEXTUAL-CONVENTION

STATUS current
DESCRIPTION
"The number plan for an SPVC address."
SYNTAX INTEGER {
other(1),
e164(2),
x121(3),
none(4),
nsap(5) -- NSAP format
}

FrSwitchedPvcAddr ::= TEXTUAL-CONVENTION

STATUS current
DESCRIPTION
"The FR SPVC address used by the network entity.
The number of octets are dependent on the address plan:
none (0 octets),
other, E.164, and X.121 (8 octets) - these are
BCD encoded; leading 0 semi-octets and a single

trailing semi-octet of 'F' are used.
NSAP (20 octets) - binary encoded."
SYNTAX OCTET STRING (SIZE(0|8|20))

```
--
-- Switched PVC
--
--
-- A Switched PVC (SPVC) is a virtual circuit that appears to the user to be
a
-- PVC but spans multiple networks as an SVC.
-- The PVC End-Point table entry (see the PVC End-Point Group in RFC 1604)
-- identifies the bi-directional traffic parameters for the originating
endpoint
-- of the SPVC; and the Switched PVC table entry (of this Switched PVC MIB)
-- identifies the target (destination) address information (e.g., E.164
address)
-- of the SPVC. Together these two entries provide the information required
-- (by the network originating the SPVC) to signal an SVC across the NNI.
--
-- To create and activate an SPVC at the originating endpoint, the following
-- procedures shall be followed:
-- 1). Create an entry in the frPVCEndptTable (see RFC 1604).
-- 2). Create an entry in the frSwitchedPvcTable (in this MIB).
-- 3). Activate the frPVCEndptTable entry.
-- 4). When the corresponding row in the frSwitchedPvcTable (i.e., the rows
with
--      matching UNI/NNI logical port and matching DLCI index values) is set
to
--      'active', an attempt is made to set up a switched connection to an
--      interface at the destination switch.

-- The Switched PVC Address table (frSwitchedPvcAddressTable defined in this
-- MIB) identifies the addresses assigned to the SPVC destination UNI/NNIs
(the
-- terminating endpoints). Prior to creating and activating an SPVC at the
-- originating endpoint (in the originating network), an entry must be
created
-- in the Switched PVC Address table in the network that terminates the
SPVC.
-- This terminating address corresponds to the target address configured in
the
-- Switched PVC table of the originating network. At the destination, a PVC
-- End-Point table entry may be defined. As a result, the PVC's inactive
-- status can be signaled across the UNI/NNI prior to the arrival of the
Setup
-- request.
```

```
--  
-- The Frame Relay Switched PVC Table (Originating Endpoint)  
--
```

```
frSwitchedPvcTable OBJECT-TYPE  
    SYNTAX  SEQUENCE OF FrSwitchedPvcEntry  
    MAX-ACCESS      not-accessible  
    STATUS      current  
    DESCRIPTION
```

"The (conceptual) table used to manage Switched Permanent Virtual Connections (SPVCs). The SPVC table is applicable only to switches."

::= { frSwitchedPvcMIBObjects 1 }

frSwitchedPvcEntry OBJECT-TYPE

SYNTAX FrSwitchedPvcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry in this table represents a Switched Permanent Virtual Connection (SPVC) originating at a switch

interface.

An SPVC is a VC that is :

- provisioned at the originating (source) interface of the connection.

- established by signalling procedures across a network to

a

destination interface.

A row in the frPVCEndptTable must be created, defining a

PVC

endpoint on the source interface, prior to creating an frSwitchedPvcEntry row. The row in the frPVCEndptTable

must

be active prior to activating the frSwitchedPvcEntry row.

The

contents of this table reflect only the characteristics

unique

to a Switched PVC. The traffic and signalling parameters

are

defined in the PVC endpoint row for the source interface.

Since the Low Layer Compatibility, Called Party Subaddress, and Calling Party Subaddress information elements are used

to

carry end-to-end information, they are not used in the configuration of Switched PVC. Note that the User-User Information information element is used to contain the frSwitchedPvcTargetIdentifier if 'specificSpvcCorrelator'

is

selected in the frSwitchedPvcTargetSelectType.

When a row is made active, an attempt is made to set up a switched connection to an interface at the destination

switch.

No objects (other than frSwitchedPvcAdminStatus and frSwitchedPvcRowStatus) can be set while the row is active.

this entry
interface.

The combination of the frSwitchedPvcIfIndex and frSwitchedPvcDlciIndex specified in the index clause of serves to identify the PVC endpoint on the source

In accordance with ITU-T X.76 Annex A, if the frSwitchedPvcTargetSelectType is provisioned for either 'specificDlci' or 'specificSpvcCorrelator', SPVC establishment can be attempted from either one or both endpoints. Otherwise, SPVC establishment must be attempted from a single endpoint chosen through bilateral

agreement - that is, the SPVC need only be provisioned at a single endpoint"

```
INDEX { frSwitchedPvcIfIndex, frSwitchedPvcDlciIndex }  
::= { frSwitchedPvcTable 1 }
```

```
FrSwitchedPvcEntry ::=
```

```
SEQUENCE {  
    frSwitchedPvcIfIndex  
        ifIndex,  
    frSwitchedPvcDlciIndex  
        Integer32,  
    frSwitchedPvcTargetAddress  
        FrSwitchedPvcAddr,  
    frSwitchedPvcTargetAddressPlan  
        FrSwitchedPvcAddrPlan,  
    frSwitchedPvcTargetSelectType  
        INTEGER,  
    frSwitchedPvcFrTargetIdentifier  
        Integer32,  
    frSwitchedPvcAtmTargetVpi  
        INTEGER,  
    frSwitchedPvcAtmTargetVci  
        INTEGER,  
    frSwitchedPvcAtmTranslation  
        INTEGER,  
    frSwitchedPvcLastReleaseCause  
        INTEGER,  
    frSwitchedPvcLastReleaseDiagnostic  
        OCTET STRING,  
    frSwitchedPvcOperStatus  
        INTEGER,  
    frSwitchedPvcAdminStatus  
        INTEGER,  
    frSwitchedPvcRestart  
        INTEGER,  
    frSwitchedPvcRetryInterval  
        INTEGER,  
    frSwitchedPvcRetryTimer  
        INTEGER,  
    frSwitchedPvcRetryFailures  
        INTEGER,  
    frSwitchedPvcRetryLimit  
        INTEGER,  
    frSwitchedPvcLastChange  
        TimeStamp,  
    frSwitchedPvcRowStatus  
        RowStatus  
}
```

Coutts

Expires May 13, 1999

[Page 8]

frSwitchedPvcIfIndex OBJECT-TYPE

SYNTAX IfIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The value of this object is equal to MIB II's ifIndex value

of

the UNI/NNI logical port for this PVC endpoint."

::= { frSwitchedPvcEntry 1 }

frSwitchedPvcDlciIndex OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The value of this object is equal to the DLCI value for

this

PVC endpoint."

::= { frSwitchedPvcEntry 2 }

frSwitchedPvcTargetAddress OBJECT-TYPE

SYNTAX FrSwitchedPvcAddr

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The target address of this SPVC."

::= { frSwitchedPvcEntry 3 }

frSwitchedPvcTargetAddressPlan OBJECT-TYPE

SYNTAX FrSwitchedPvcAddrPlan

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The target address plan of this SPVC."

::= { frSwitchedPvcEntry 4 }

frSwitchedPvcTargetSelectType OBJECT-TYPE

SYNTAX INTEGER {
 anyDlci(1),
 specificDlci(2),
 specificSpvcCorrelator(3),
 anyVpiVci(4),
 specificVpiVci(5)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The 'anyDlci', 'specificDlci', and 'specificSpvcCorrelator'

values are used to indicate an FR target. These values
indicate whether the target DLCI value or SPVC correlator
is

Coutts

Expires May 13, 1999

[Page 9]

to be used at the destination. If the value 'anyDlci' is specified, the destination switch will choose the DLCI value.

In such a case, once the SPVC frSwitchedPvcOperStatus value is 'connected', the value of this object changes to 'specificDlci' such that the same DLCI value will be used even if the connection is subsequently torn-down and re-established. The DLCI value chosen will be available for reading in frSwitchedPvcTargetIdentifier. If the value 'specificDlci' or 'specificSpvcCorrelator' is specified, then a value must be supplied for object frSwitchedPvcTargetIdentifier prior to activation of the row. This value is then to be used at the destination.

The 'anyVpiVci' and 'specificVpiVci' values are used to indicate an ATM target (and FR/ATM interworking). If the value 'anyVpiVci' is specified, the destination switch will choose the VPI/VCI values. In such a case, once the the SPVC frSwitchedPvcOperStatus value is 'connected', the value of this object changes to 'specificVpiVci' such that the same VPI/VCI value will be used even if the connection is subsequently torn-down and re-established. The VPI/VCI value chosen will be available for reading in frSwitchedPvcAtmTargetVpi and frSwitchedPvcAtmTargetVci. If the value 'specificVpiVci' is specified, then a value must be supplied for objects frSwitchedPvcAtmTargetVpi and frSwitchedPvcAtmTargetVci prior to activation of the row. These values are then to be used at the destination."

```
DEFVAL { specificDlci }
::= { frSwitchedPvcEntry 5 }
```

frSwitchedPvcTargetIdentifier OBJECT-TYPE

SYNTAX Integer32 (0..8388607)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object can represent either the target DLCI value or

the
frSwitchedPvcTargetSelectType
value
in
of the

SPVC correlator value. When the
is set to 'specificDlci', this object represents the DLCI
of the SPVC and has a range of 16 to 8388607. It is passed
the SETUP message Frame Relay Called Party SPVC information
element. When the frSwitchedPvcTargetSelectType is set to
'specificSpvcCorrelator', this object represents the value
specific SPVC correlator to be passed in the SETUP message
User-User information element."

::= { frSwitchedPvcEntry 6 }

frSwitchedPvcAtmTargetVpi OBJECT-TYPE
SYNTAX INTEGER (0..4095)

```

MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "When the frSwitchedPvcTargetSelectType is set to
    'specificVpiVci', this object represents the VPI value
    of the SPVC target destination. It is passed in the SETUP
    message Frame Relay Called Party SPVC information element."
 ::= { frSwitchedPvcEntry 7 }

```

```

frSwitchedPvcAtmTargetVci      OBJECT-TYPE
SYNTAX  INTEGER (0..65535)
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "When the frSwitchedPvcTargetSelectType is set to
    'specificVpiVci', this object represents the VCI value
    of the SPVC target destination. It is passed in the SETUP
    message Frame Relay Called Party SPVC information element."
 ::= { frSwitchedPvcEntry 8 }

```

```

frSwitchedPvcAtmTranslation    OBJECT-TYPE
SYNTAX  INTEGER {
    none(1),
    rfc1490-rfc1483(2)
}
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "When the frSwitchedPvcTargetSelectType is 'anyVpiVci' or
    'specificVpiVci', FR/ATM interworking is indicated. For
    FR/ATM service interworking, the value 'rfc1490-rfc1483'
    selects multiprotocol encapsulation translation from FR
    RFC 1490 to ATM RFC 1483."
 ::= { frSwitchedPvcEntry 9 }

```

```

frSwitchedPvcLastReleaseCause  OBJECT-TYPE
SYNTAX  INTEGER(1..127)
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "Value of the Cause field of the Cause Information Element
    the last Release Signalling message received for this SPVC.
    Indicates the reason for the Disconnect."
 ::= { frSwitchedPvcEntry 10 }

```

```

frSwitchedPvcLastReleaseDiagnostic  OBJECT-TYPE
SYNTAX  OCTET STRING (SIZE(0..8))

```

in

MAX-ACCESS

read-only

Coutts

Expires May 13, 1999

[Page 11]

STATUS current

DESCRIPTION

"Value of the first 8 bytes of diagnostic information from the

Cause field of the Cause Information Element in the last Release Signalling message received for this SPVC."

::= { frSwitchedPvcEntry 11 }

frSwitchedPvcOperStatus OBJECT-TYPE

SYNTAX INTEGER {

other(1),

setupInProgress(2),

connectedAsOriginator(3),

connectedAsTerminator(4),

failed(5)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Describes the status of the SPVC. The value 'connectedAsOriginator' is set if this endpoint initiated establishment of the connected SPVC. The value is set to 'connectedAsTerminator' if the other endpoint initiated establishment of the connect SPVC. If the row is not

active,

the value of this object is 'other'."

::= { frSwitchedPvcEntry 12 }

frSwitchedPvcAdminStatus OBJECT-TYPE

SYNTAX INTEGER {

up(1),

down(2)

}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Used to select the administrative state of this SPVC. When changed to 'down', the PVC is released and the frSwitchedPvcOperStatus object transitions to 'failed'.

When

changed to 'up', the setup procedure is begun and the frSwitchedPvcOperStatus object transitions to

'setupInProgress'."

::= { frSwitchedPvcEntry 13 }

frSwitchedPvcRestart OBJECT-TYPE

SYNTAX INTEGER {

restart(1),

```
        noop(2)
    }
MAX-ACCESS      read-create
STATUS   current
```

DESCRIPTION

"When the value is set to 'noop' then no action is taken; otherwise, when the value is set to 'restart', the PVC is released if necessary and a new setup procedure is begun.

As a

result of this action, the frSwitchedPvcOperStatus object transitions to 'setupInProgress' (either from the

'connected'

or 'failed' state). When read, the value 'noop' is

returned."

::= { frSwitchedPvcEntry 14 }

frSwitchedPvcRetryInterval OBJECT-TYPE

SYNTAX INTEGER (0..3600)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Defines the period to wait (in seconds) before attempting

to

establish the SPVC connection after the first failed call attempt. Zero represents an infinite interval indicating

no

retries."

DEFVAL { 0 }

::= { frSwitchedPvcEntry 15 }

frSwitchedPvcRetryTimer OBJECT-TYPE

SYNTAX INTEGER

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates the current value of the retry timer (in seconds) for this connection. When the value reaches zero, an

attempt

will be made to establish the SPVC connection"

::= { frSwitchedPvcEntry 16 }

frSwitchedPvcRetryFailures OBJECT-TYPE

SYNTAX INTEGER

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates how many attempts to establish the connection

have

failed. This counter is reset whenever a connection is successfully established or the SPVC is restarted."


```
::= { frSwitchedPvcEntry 17 }
```

```
frSwitchedPvcRetryLimit OBJECT-TYPE  
    SYNTAX  INTEGER  
    MAX-ACCESS      read-create  
    STATUS      current  
    DESCRIPTION
```

call
set
establish

"Sets a maximum limit on how many consecutive unsuccessful setup attempts can be made before stopping the attempt to up the connection. If this limit is reached then management action will be required to initiate a new attempt to the connection. A value of zero indicates no limit - the attempt will continue until successful."

DEFVAL { 0 }
::= { frSwitchedPvcEntry 18 }

frSwitchedPvcLastChange OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Used to indicate time of last status change."

::= { frSwitchedPvcEntry 19 }

frSwitchedPvcRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Used to create and delete an SPVC. When this object is set

to

'active' an attempt is made to set up the SPVC. When this object has the value 'active' and is set to another value,

any

set-up or connection in-progress is released."

::= { frSwitchedPvcEntry 20 }

--

-- The Frame Relay Switched PVC Address Table (Terminating Endpoint)

--

--

-- This table is used to configure one or more addresses prior to setting up Switched PVCs at an interface. In addition, prior to setting up a Switched PVC at the originating interface, this table can be consulted to determine available addresses at the destination interface.

--

frSwitchedPvcAddressTable OBJECT-TYPE

SYNTAX SEQUENCE OF FrSwitchedPvcAddressEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table is used to configure addresses at an interface on this node prior to accepting Switched PVCs at that same interface."

```
::= { frSwitchedPvcMIBObjects 2 }
```

```
frSwitchedPvcAddressEntry      OBJECT-TYPE
    SYNTAX          FrSwitchedPvcAddressEntry
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "Address entry for configuring the destination
        endpoint for a Switched PVC at an interface"
    INDEX { frSwitchedPvcAddressIfIndex, frSwitchedPvcAddressPlan,
            frSwitchedPvcAddressAddress }
    ::= { frSwitchedPvcAddressTable 1 }
```

```
FrSwitchedPvcAddressEntry ::=
    SEQUENCE {
        frSwitchedPvcAddressIfIndex      ifIndex,
        frSwitchedPvcAddressPlan          FrSwitchedPvcAddrPlan,
        frSwitchedPvcAddressAddress       FrSwitchedPvcAddr,
        frSwitchedPvcAddressRowStatus     RowStatus
    }
```

```
frSwitchedPvcIfIndex OBJECT-TYPE
    SYNTAX  IfIndex
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "The value of this object is equal to MIB II's ifIndex
value of
        the UNI/NNI logical port for this PVC endpoint."
    ::= { frSwitchedPvcAddressEntry 1 }
```

```
frSwitchedPvcAddressPlan      OBJECT-TYPE
    SYNTAX  FrSwitchedPvcAddrPlan
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "The number plan for this SPVC destination address."
    ::= { frSwitchedPvcAddressEntry 2 }
```

```
frSwitchedPvcAddressAddress    OBJECT-TYPE
    SYNTAX  FrSwitchedPvcAddr
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "The destination address for an SPVC."
    ::= { frSwitchedPvcAddressEntry 3 }
```

```
frSwitchedPvcAddressRowStatus  OBJECT-TYPE
```

SYNTAX RowStatus

Coutts

Expires May 13, 1999

[Page 15]

```

MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "Used to create and delete an SPVC address entry."
 ::= { frSwitchedPvcAddressEntry 4 }

```

```
--
```

```
-- Currently Failing Switched PVC table.
```

```
--
```

```

frCurrentlyFailingSwitchedPvcTable      OBJECT-TYPE
    SYNTAX  SEQUENCE OF FrCurrentlyFailingSwitchedPvcEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A table indicating all Switched Permanent Virtual
Connections
        (Switched PVCs) for which the frSwitchedPvcRowStatus is
        'active' and the frSwitchedPvcOperStatus is other than
        'connected'."
    ::= { frSwitchedPvcMIBObjects 3 }

```

```

frCurrentlyFailingSwitchedPvcEntry      OBJECT-TYPE
    SYNTAX  FrCurrentlyFailingSwitchedPvcEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "Each entry in this table represents a Switched Permanent
        Virtual Connection (Switched PVC) for which the
        frSwitchedPvcRowStatus is 'active' and the
        frSwitchedPvcOperStatus is other than 'connected'."
    INDEX { ifIndex, frDlci }
    ::= { frCurrentlyFailingSwitchedPvcTable 1 }

```

```

FrCurrentlyFailingSwitchedPvcEntry ::=
    SEQUENCE {
        frCurrentlyFailingSwitchedPvcTimeStamp
            TimeStamp
    }

```

```

frCurrentlyFailingSwitchedPvcTimeStamp  OBJECT-TYPE
    SYNTAX  TimeStamp
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The time at which this Switched PVC began to fail."
    ::= { frCurrentlyFailingSwitchedPvcEntry 1 }

```

Coutts

Expires May 13, 1999

[Page 16]

```
--
-- Switched PVC MIB Definitions
--

frSwitchedPvcBaseGroup  OBJECT IDENTIFIER ::= { frSwitchedPvcMIBObjects 4 }

frSwitchedPvcCallFailuresTrapEnable      OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS      read-write
    STATUS      current
    DESCRIPTION
        "Allows the generation of traps in response to call
failures."
    ::= { frSwitchedPvcBaseGroup 1 }

frSwitchedPvcCallFailures      OBJECT-TYPE
    SYNTAX  TruthValue
    MAX-ACCESS      read-only
    STATUS      current
    DESCRIPTION
        "The number of times a series of call attempts has failed to
        establish a Switched PVC."
    ::= { frSwitchedPvcBaseGroup 2 }

frSwitchedPvcCurrentlyFailingSwitchedPvcs      OBJECT-TYPE
    SYNTAX  Gauge32
    MAX-ACCESS      read-only
    STATUS      current
    DESCRIPTION
        "The current number of Switched-PVC connections for which
the
        frSwitchedPvcOperStatus does not have the value
'connected'."
    ::= { frSwitchedPvcBaseGroup 3 }

frSwitchedPvcNotificationInterval      OBJECT-TYPE
    SYNTAX  Integer32 (0..3600)
    UNITS      "seconds"
    MAX-ACCESS      read-write
    DESCRIPTION
        "The minimum interval in seconds between the sending of
        frSwitchedPvcCallFailuresTrap notifications."
    ::= { frSwitchedPvcBaseGroup 4 }

--
-- Switched PVC Traps
--
```



```
frSwitchedPvcTraps          OBJECT IDENTIFIER ::=
{ frSwitchedPvcMIBTraps 1 }
```

Coutts

Expires May 13, 1999

[Page 17]

```
frSwitchedPvcTrapsPrefix      OBJECT IDENTIFIER ::= { frSwitchedPvcTraps
0 }
```

```
frSwitchedPvcCallFailuresTrap  NOTIFICATION-TYPE
```

```
    OBJECTS {
        frSwitchedPvcCallFailures,
        frSwitchedPvcCurrentlyFailingSwitchedPvcs }
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "A notification indicating that one or more series of
        call attempts in trying to establish a Switched PVC
        have failed since the last frSwitchedPvcCallFailuresTrap
        was sent.  If this trap has not been sent for the last
        frSwitchedPvcNotificationInterval, then it will be sent
        on the next increment of frSwitchedPvcCallFailures."
```

```
 ::= { frSwitchedPvcTrapsPrefix 1 }
```

```
END
```


6. Acknowledgments

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7. References

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