CHAPTER 21

Frame Relay

This chapter describes the level of support that Cisco ANA provides for Frame Relay, as follows:

Technology Description

Please see Part 1: Cisco VNEs in this guide for information about which devices support the various technologies.

Frame Relay

Frame Relay is a high-performance data link (Layer 2) WAN protocol that uses variable-length packet switching with statistical multiplexing. Although originally designed for use across ISDN interfaces, today it is used over a variety of additional network interfaces.

Frame Relay networks consist of Frame Relay switches interconnected by point-to-point Frame Relay links or interfaces. Frame Relay is fundamentally connection oriented, which means that a VC must be set up across the Frame Relay network prior to any data transfer.

Information Model Objects (IMOs)

This section describes the following IMOs:

Frame Relay Interface

The data link layer Frame Relay Interface object aggregates multiple Frame Relay Virtual Connections, which it is bound to by its VC Table attributes. It is bound by its Containing Termination Points attribute to a physical layer interface. It is accessed primarily by the data link layer VC Multiplexer bound by its Contained Connection Termination Points attribute. It is also accessed by the Virtual Connection Switching Entity.

Table 21-1 Frame Relay Interface (IFrameRelay/IFrTrunk)

Attribute Name	Attribute Description	Scheme	Polling Interval
Address Format	Frame Relay address format (*Unknown, q921, q922March90, q922November90, q922*)	Any	Configuration
Maximum Supported VCs	Maximum supported virtual connections	Any	Configuration
Protocol Type	Frame Relay protocol type (*Unknown, Frame Relay, FR FUNI, Frame Forward*)	Any	Configuration
VC Table	Array of Frame Relay Virtual Connections	Any	Configuration
Cross Connect Table	Array of Virtual Cross Connections	Any	Configuration
IANA Type	Internet Assigned Numbers Authority (IANA) type of the sublayer	N/A	N/A
Containing Termination Points	Underlying termination points (connection or physical)	Any	N/A
Contained Connection Termination Points	Bound connection termination points	Any	N/A

Frame Relay Virtual Connection

The data link layer Frame Relay Virtual Connection object is bound by its Containing Termination Points attribute to a data link layer Frame Relay Interface object. It is accessed primarily by a Virtual Cross Connection and data link layer VC Encapsulation, but is not bound to them by any of its attributes.

Table 21-2 Frame Relay Virtual Connection (IFrVc)

Attribute Name	Attribute Description	Scheme	Polling Interval
Data Link Connection Identifier	Data Link Connection Identifier (DLCI)	Any	Configuration
Traffic Descriptor	Traffic descriptor (Frame Relay Traffic Descriptor)	Any	Configuration
Discarded and Received Input Data Counters	Discarded and received input octet and packet counters	Any	Configuration
Dropped and Forwarded Output Data Counters	Dropped and forwarded output octet and packet counters	Any	Configuration
Ingress Traffic Descriptor	Ingress traffic descriptor (Frame Relay Traffic Descriptor)	Any	Configuration
Egress Traffic Descriptor	Egress traffic descriptor (Frame Relay Traffic Descriptor)	Any	Configuration
Administrative Status	Administrative status (*Unknown, Up, Down*)	Any	Status
Operational Status	Operational status (*Unknown, Up, Down*)	Any	Status

Table 21-2 Frame Relay Virtual Connection (IFrVc) (continued)

Attribute Name	Attribute Description	Scheme	Polling Interval
IANA Type	Internet Assigned Numbers Authority (IANA) type of the sublayer	N/A	N/A
Containing Termination Points	Underlying termination points (connection or physical)	Any	N/A
Contained Connection Termination Points	Bound connection termination points	Any	N/A

Frame Relay Traffic Descriptor

The Frame Relay Traffic Descriptor object describes the traffic of a single Frame Relay Virtual Connection. It is aggregated by a Traffic Descriptor Container object (see Common Components).

Table 21-3 Frame Relay Traffic Descriptor (IFRTrafficDescriptor)

Attribute Name	Attribute Description	Scheme	Polling Interval
Committed Rate	Committed burst rate	Any	Configuration
Excess Burst Rate	Excess burst rate	Any	Configuration
Name	Traffic descriptor name	Any	Configuration
Index	Traffic descriptor index	Any	Configuration

Frame Relay Logical Interface

The data link layer Frame Relay Logical Interface object aggregates multiple Frame Relay Virtual Connections, which it is bound to by its VC Table attributes. It is bound by its Containing Termination Points attribute to a physical layer interface. It is accessed primarily by the Virtual Connection Switching Entity and data link layer VC Encapsulation bound by its Contained Connection Termination Points attribute.

Table 21-4 Frame Relay Logical Interface (IFrameRelayLogicalPort/Trunk)

Attribute Name	Attribute Description	Scheme	Polling Interval
Administrative Status	Administrative status (*Null, Up, Down, Testing*)	Any	Status
Operational Status	Operational status (*Null, Up, Down, Testing, Unknown, Dormant, Not Present*)	Any	Status
All additional attributes are the same as Frame Relay Interface (IFrameRelay/IFrTrunk)			

Frame Relay Trunk Virtual Connection

The data link layer Frame Relay Trunk Virtual Connection object is bound by its Containing Termination Points attribute to a Frame Relay Interface object. It is accessed primarily by a Virtual Cross Connection and data link layer VC Encapsulation, but is not bound to them by any of its attributes.

Table 21-5 Frame Relay Trunk Virtual Connection (IFrTrunkVc)

Attribute Name	Attribute Description	Scheme	Polling Interval
Destination Description	Destination party description	Any	Configuration
All additional attributes are the same as Frame Relay Virtual Connection (IFrVc)			

Vendor-Specific Inventory and IMOs

There are no vendor-specific inventory or IMOs for this technology.

Service Alarms

The following alarms are supported for this technology:

- Cloud Problem, page 41-22
- Discard Packets, page 41-26
- Dropped Packets, page 41-27
- Link Down, page 41-43
- Port Down, page 41-55
- Rx Utilization, page 41-58
- Tx Utilization, page 41-62

Note that these alarms, apart from Cloud Problem, are related to the underlying physical interface (see Common Components).