Frame Formats

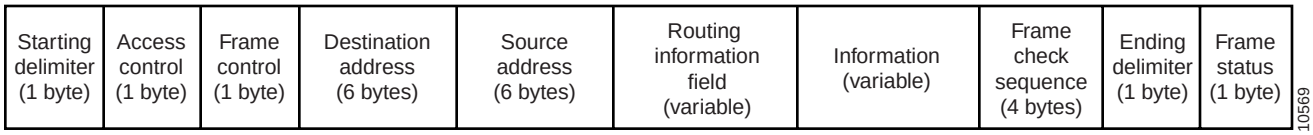
This appendix provides information about the formats of the following types of packets, frames, and cells:

- Token Ring Frame Format
- CDP Packet Format
- DRiP Frame Formats
- VTP Frame Format
- STP BPDU Frame Formats
- ISL Token Ring Frame Format
- ATM Cell Format

Token Ring Frame Format

Figure shows the format of a Token Ring frame.

Figure A-1 Token Ring Frame Format



Starting Delimiter

The Starting Delimiter field indicates the arrival of a frame or token. This field includes bits that are set to intentionally violate the Differential Manchester Code to distinguish this field as a delimiter.

Access Control

The Access Control field contains the following bits:

- Priority bit—Used to indicate the priority of the frame or token.
- Reservation bit—Used to indicate the priority required for the next token to gain access to the ring.
- Token bit—Used to differentiate a token from a data or command frame.
- Monitor bit—Used by the active monitor to determine whether a frame is circling the ring endlessly.

Frame Control

The Frame Control field indicates the frame type and contains the following:

- Frame type bit—Used to indicate whether this is a MAC or LLC frame.
- Reserved bit—Reserved for future use.
- Control bits—Used to indicate whether the frame is to be processed by the normal buffer or the high-priority buffer.

Destination Address

The Destination Address field indicates the address of the device or devices for which the frame is intended. The destination address can be one of the following:

- Individual address—Identifies a particular ring station on the Token Ring network. This can be either a universally or locally administered address.
- Group address—Identifies a group of destination ring stations on the Token Ring network. This can be either a locally administered group address or a functional address, such as the functional address of the configuration report server.

Source Address

The Source Address field identifies the station that sent the frame. In the source address the first bit (bit 0) is called the routing information indicator (RII) bit. When this bit is set to one it indicates that the frame contains routing information. If the bit is set to zero then no routing information is included.

Routing Information

Used only in SRB, the Routing Information field indicates the route the frame is to take through the network. The routing information field consists of the following:

- Routing Control field
  - Broadcast indicators—Indicate whether the frame is to be sent along a specified path (nonbroadcast), through all bridges to all segments in a network (all-routes broadcast), or through only certain designated bridges so that the frame will appear only once on every network segment (single-route broadcast).
  - Direction bit—Indicates how the bridge should read the route descriptor when it forwards a frame.
- Route Descriptor field—Indicates the path using a ring number/bridge number/ring number sequence.

Information

The Information field contains the data that is being sent to upper layers.

Frame Check Sequence

The Frame Check Sequence field contains the cyclic redundancy check (CRC) value for all bits from the Frame Control field through the Frame Check Sequence field. The Frame Check Sequence value is checked by a receiving station to determine if errors occurred in transmission.

Ending Delimiter

The Ending Delimiter field indicates the end of the frame or token. It also contains bits to indicate if a frame is damaged or if the frame is the last in a logical sequence.

Frame Status

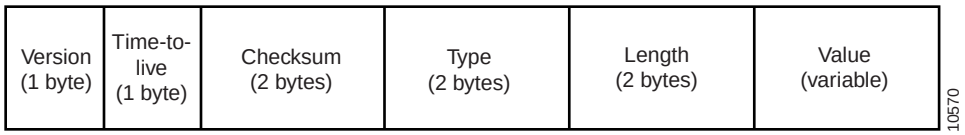
The Frame Status field indicates to the transmitting station whether this frame has been copied by the destination station.

CDP Packet Format

The CDP packet contains information about the Cisco devices in the network. It consists of a header, followed by a set of variable-length fields consisting of type/length/value triplets.

Figure A-2 shows the format of a CDP packet.

Figure A-2 CDP Packet Format



Version

The Version field indicates the version of CDP being used. The value is always 0x01.

Time-to-Live

The Time-to-Live field indicates the amount of time, in seconds, that a receiver should retain the information contained in this packet.

Checksum

The Checksum field indicates the standard IP checksum.

Type

The Type field indicates the type/length/value type. The possible CDP type/length/value types are as follows:

- Device ID
- Address
- Port ID
- Capabilities
- Version
- Platform
- IP Prefix

Length

The Length field indicates the total length, in bytes, of the type, length, and value fields.

Value

The Value field contains the type/length/value value, which depends on the type/length/value type as described below:

- Device ID

  The device ID type/length/value (type 0x0001) identifies the device. This type of type/length/value allows different address references to be associated with the same device.

  By default, the device ID is either the device's fully-qualified host name (including the domain name) or the device's hardware serial number in ASCII.

- Address

  The address type/length/value (type 0x0002) contains a number that indicates how many addresses are contained in the packet, followed by one entry for each address being advertised. The addresses advertised are the ones assigned to the interface on which the CDP message is sent. A device can advertise all addresses for a given protocol suite and, optionally, can advertise one or more loopback IP addresses. If the device can be managed by SNMP, the first entry in the address type/length/value is an address at which the device receives SNMP messages.

  Figure A-3 shows the format of each address contained in the packet.

Figure A-3 Address Type/Length/Value Fields

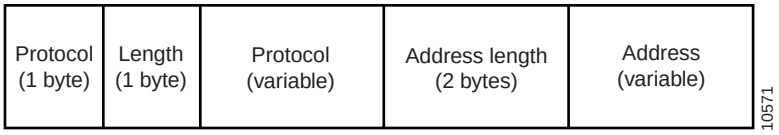


Table A-1 explains the fields in the address type/length/value packet.

Table A-1 Address Type/Length/Value Packet Fields

Field	Description
Protocol	Protocol type. It can be one of the following values: • 1—NLPID format • 2—802.2 format
Length	Length of the protocol field. For protocol type 1, the length is 1. For protocol type 2, the length is either 3 or 8, depending on whether SNAP is used.
Protocol	One of the following values: • 0x81—ISO CLNS (protocol type 3D 1) • 0xCC—IP (protocol type 3D 1) • 0xAAAA03 000000 0800—Pv6 (protocol type 3D 2) • 0xAAAA03 000000 6003—DECNET Phase IV (protocol type 3D 2) • 0xAAAA03 000000 809B—AppleTalk (protocol type 3D 2) • 0xAAAA03 000000 8137—Novell IPX (protocol type 3D 2) • 0xAAAA03 000000 80c4—Banyan VINES (protocol type 3D 2) • 0xAAAA03 000000 0600— XNS (protocol type 3D 2) • 0xAAAA03 000000 8019—Apollo Domain (protocol type 3D 2)
Address length	Length of the address field in bytes.
Address	Address of the interface, or the address of the system if addresses are not assigned to the interface.

- Port ID

  The port ID type/length/value (type 0x0003) contains an ASCII character string that identifies the port on which the CDP message is sent. The type/length/value length determines the length of the string.

- Capabilities

  The capabilities type/length/value (type 0x0004) describes the device's functional capability. It can be set to one of the bits listed in Table A-2.

Table A-2 Capabilities Type/Length/Value Bit Definitions

Bit	Description
0x01	Performs level 3 routing for at least one network layer protocol.
0x02	Performs level 2 transparent bridging.
0x04	Performs level 2 source-route bridging. A source-route bridge would set both this bit and bit 0x02.
0x08	Performs level 2 switching. The difference between this bit and bit 0x02 is that a switch does not run the STP. This device is assumed to be deployed in a physical loop-free topology.
0x10	Sends and receives packets for at least one network layer protocol. If the device is routing the protocol, this bit should not be set.
0x20	The bridge or switch does not forward IGMP Report packets on nonrouter ports.
0x40	Provides level 1 functionality.

- Version

  The version type/length/value (type 0x0005) contains a character string that provides information about the software release version that the device is running. The type/length/value length field determines the length of the string.
- Platform

  The platform type/length/value (type 0x0006) contains an ASCII character string that describes the hardware platform of the device. The type/length/value length field determines the length of the string. The following are the possible string values:
  - Cisco 7000
  - Cisco 7010
  - Cisco 4500
  - Cisco 3100
  - Cisco 3000
  - Cisco 2500
  - Cisco 2000
  - Cisco 1000
  - AGS+
  - AGS
  - MGS
  - CGS
  - IGS
  - cs500
  - Catalyst
  - A100
  - Synergy

- IP Prefix

  The IP Prefix type/length/value (type 0x0007) contains a set of 0 or more IP prefixes in its value field. No prefixes are included when the type/length/value's length field is 0. Otherwise, the length field includes the length of the type and value fields, plus 5 bytes for every IP prefix included. Each IP prefix consists of 4 bytes of IP network number and 1 byte representing the network mask. The network mask can be in the range 0 through 32, and represents the number of bits set in the mask (left contiguous).

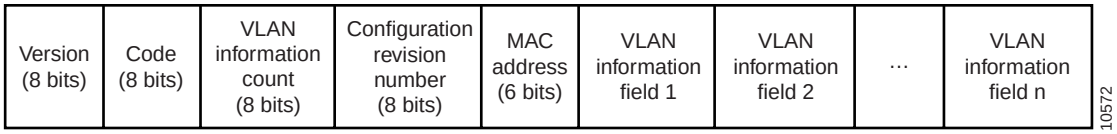
  Each IP prefix represents one of the directly connected IP network segments of the local router. This type/length/value enables an IP stub router to communicate IP topology information to a central site router, without requiring the configuration of a full-blown IP routing protocol.

DRiP Frame Formats

The DRiP frame contains information about the VLANs configured in the management domain. It consists of some header information followed by one or more VLAN information fields.

Figure A-4 shows the format of a DRiP frame.

Figure A-4 DRiP Frame Fields



Version

The Version field identifies the version of DRiP being used.

Code

The Code field indicates whether this message is an advertisement that indicates a change (0x01) or no change (0xFF).

VLAN Information Count

The VLAN Information Count field indicates the number of VLAN information fields contained in this advertisement.

Header Length

The Header Length field indicates the size in bytes of the header for this type of advertisement. The header includes all fields from the version up to the first VLAN information field.

Configuration Revision Number

The Configuration Revision Number field indicates the revision number of the configuration information. A configuration revision number starts at zero and increments by one with each modification until it reaches the value 4294947295, at which point it wraps back to zero and starts incrementing again.

Last Changed Revision

The Last Changed Revision field indicates the revision number of the last change associated with the originating MAC address. Switches in the domain compare the value in this field to their current configuration number to determine whether the advertisement contains new information.

MAC Address

The MAC Address field contains the MAC address, in canonical format, of the device that is sending the DRiP advertisement.

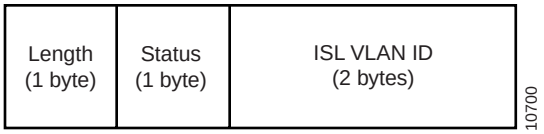
VLAN Information

The VLAN Information fields contain information for each active or configured TrCRF on the switch. A TrCRF is considered active if a port associated with the TrCRF is open on the ring. If a TrCRF ceases to be included in the VLAN information field, it indicates there are no longer ports active or configured on the TrCRF. The TrCRF should then be removed from the database.

If a periodic timer triggers an advertisement, regardless of whether there has been configuration revision change, all VLAN information for the device is included.

Figure A-5 shows the format of the VLAN information fields.

Figure A-5 VLAN Information Fields



Length

The Length field indicates the length, in bytes, of the VLAN information field (including this length field). This length will be a multiple of 4.

Status

The Status field indicates that the status of the TrCRF has changed. The TrCRF now either has an active port or the last active port that was on the TrCRF has become inactive, leaving the TrCRF with no active ports. Possible values are the following:

- Bit 7 (0x00)—No ports are active on the TrCRF.
- Bit 7 (0x01)—Active ports exist on the TrCRF.
- Bit 6 (0x00)—No ports are configured on the TrCRF.
- Bit 6 (0x01)—Ports are configured on the TrCRF.
- Bit 0 through 5 (0x00)—Reserved.

If the message is triggered by a periodic timer, then the status will indicate the current status of the VLAN.

ISL VLAN ID

The ISL VLAN ID indicates the VLAN ID of this VLAN on ISL trunks. Possible values are 0 through 1023.

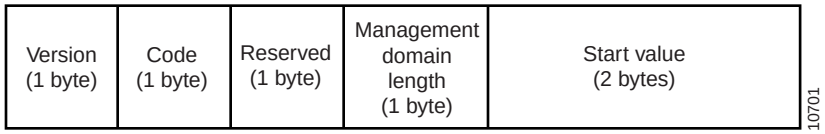
VTP Frame Format

There are three types of VTP frames: Advert-Request, Summary-Advert, and Subset-Advert.

Advert-Request Frame Format

An Advertisement Request (Advert-Request) is a request for configuration information. Figure A-6 shows the format of an Advert-Request frame.

Figure A-6 Advert-Request Frame Format



Version

The Version field indicates the VTP version number. This value is always 0x01.

Code

The Code field indicates the message type. Possible values are:

- 0x01—Summary-Advert
- 0x02—Subset-Advert
- 0x03—Advert-Request

Management Domain Length

The Management Domain Length field indicates the length of the name of the management domain.

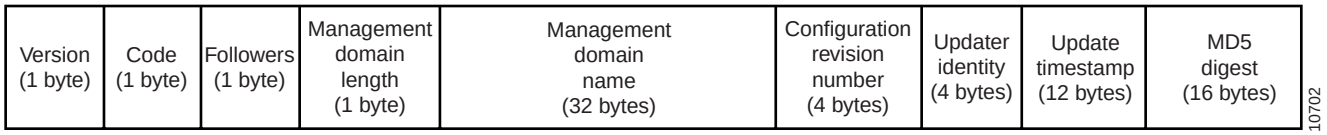
Start Value

The Start Value field indicates the VLAN ID of the first VLAN for which information is requested. Any response to the request should contain information for all VLANs having an ISL VLAN ID greater than or equal to this value. For example, in a request for information on all VLANs, this value is 0.

Summary-Advert Frame Format

The Summary Advertisement (Summary-Advert) contains information about the sending device and summary information about the advertisement, including the number of subset advertisements to follow. The maximum size of a Summary-Advert is 1492 bytes. Figure A-6 shows the format of a Summary-Advert frame.

Figure A-7 Summary-Advert Frame Format



Version

The Version field indicates the VTP version number. This value is always 0x01.

Code

The Code field indicates the message type. Possible values are:

- 0x01—Summary-Advert
- 0x02—Subset-Advert
- 0x03—Advert-Request

Followers

The Followers field indicates the number of Subset-Advert messages that follow this Summary-Advert.

Management Domain Length

The Management Domain Length field indicates the length of the name of the management domain.

Management Domain Name

The Management Domain Name field indicates the name of the management domain.

Configuration Revision Number

The Configuration Revision Number field indicates the revision number of the configuration information. As with CDP configuration revision numbers, a configuration revision number starts at zero and increments by one with each modification until it reaches the value 4294947295, at which point it wraps back to zero and starts incrementing again.

Updater Identity

The Updater Identity field indicates the IP address of the device that received the command that caused the configuration revision number to have its current value.

Update Timestamp

The Update Timestamp field indicates the time at which the configuration revision number was most increased to its current value. The timestamp is in the format “yymmddhhmmss”, where *yymmdd* represents the year, month, and day and *hhmmss* represents the hours, minutes, and seconds.

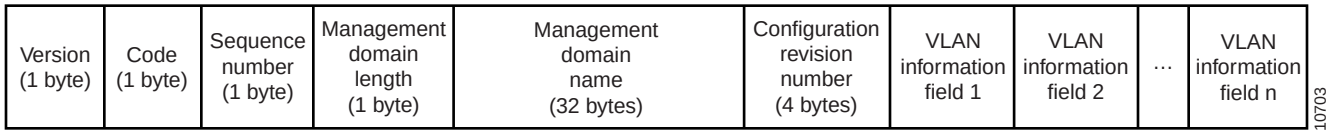
MD5 Digest

MD5 digest value over the secret value and all VLAN information

Subset-Advert Frame Format

The Subset Advertisement (Subset-Advert) contains information about the VLANs being advertised. Figure A-6 shows the format of a Subset-Advert frame.

Figure A-8 Subset-Advert Frame Format



Version

The Version field indicates the VTP version number. This value is always 0x01.

Code

The Code field indicates the message type. Possible values are:

- 0x01—Summary-Advert
- 0x02—Subset-Advert
- 0x03—Advert-Request

Sequence Number

The Sequence Number field indicates the order of this Subset-Advert frame within the series of Subset-Advert frames that follow a Summary-Advert. For the first Subset-Advert frame following a Summary-Advert frame the sequence number is 1.

Management Domain Length

The Management Domain Length field indicates the length of the name of the management domain.

Management Domain Name

The Management Domain Name field indicates the name of the management domain.

Configuration Revision Number

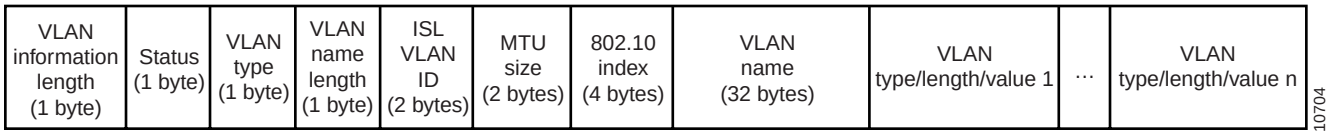
The Configuration Revision field indicates the revision number of the configuration information. As with CDP configuration revision numbers, a configuration revision number starts at zero and increments by one with each modification until it reaches the value 4294947295, at which point it wraps back to zero and starts incrementing again.

VLAN Information Field

Each VLAN Information field contains information for a different VLAN, starting with the VLAN with the lowest ISL VLAN IDs.

Figure A-6 shows the format of the VLAN information field.

Figure A-9 VLAN Information Field



VLAN Information Length

The VLAN Information Length field indicates the length, in bytes, of the VLAN information field for this VLAN in this advertisement. The length is a multiple of 4.

Status

The Status field indicates the status of this VLAN. Possible values are:

- Bit 0 (0x01)—VLAN suspended
- Bits 1 through 7 (0x02 through 0x80)—Reserved

VLAN Type

The VLAN Type field indicates the type of VLAN. Possible values are:

- 0x01—Ethernet
- 0x02—FDDI
- 0x03—TrCRF
- 0x04—FDDI-net
- 0x05—TrBRF

VLAN Name Length

The VLAN Name Length field indicates the length, in bytes, of the VLAN name for this VLAN.

ISL VLAN ID

The ISL VLAN ID field indicates the ID of this VLAN on ISL trunks. Possible values are 0 through 1023.

MTU Size

The MTU Size field indicates the maximum transmission unit (MTU) for this VLAN. Possible values are 1500 through 18190.

802.10 Index

The 802.10 Index field indicates the 802.10 security association identifier (SAID) value for this VLAN.

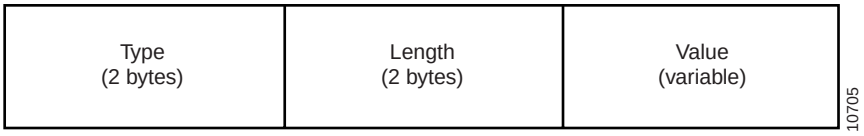
VLAN Name

The VLAN Name field indicates the VLAN name for this VLAN. The name can be between 1 and 32 bytes in length and is padded with zeros.

VLAN Type/Length/Value Field

The VLAN type/length/value fields are variable in length and contain the a type, length, and value. Figure A-10 shows the format of the VTP variable-length fields.

Figure A-10 VLAN Type/Length/Value Field



Field	Description
Type	The Type field indicates the type/length/value type. Possible values are: • 0x01—Source-Routing Ring Number • 0x02—Source-Routing Bridge Number • 0x03—STP Type • 0x04—Parent VLAN • 0x05—Translationally bridged VLANs • 0x06—Pruning • 0x07—Bridge Type • 0x08—Max ARP Hop Count • 0x09—Max STE Hop Count • 0x0A—Backup CRF Mode
Length	The Length field indicates the length of this VLAN type/length/value.
Value	The Value field contains the type/length/value value, which depends on the type/length/value type as described below: • Source-Routing Ring Number—Number that uniquely identifies this ring in a source-routed network. • Source-Routing Bridge Number—Number that uniquely identifies this bridge in a source-routed network. • STP Type—Type of STP being used. Possible values are 1 (SRT), 2 (SRB), and 3 (Auto). • Parent VLAN—ISL VLAN ID of the TrBRF to which this TrCRF is assigned. • Translationally Bridged VLANs—ISL VLAN ID of the VLANs to which this VLAN is translational-bridged, formatted as 2 bytes per VLAN appended by 2 bytes of zeros. • Pruning—Whether VTP pruning is enabled. Possible values are 1 (Enabled) and 2 (Disabled). • Bridge Type—Bridging mode of the VLAN. Possible values are 1 (SRT) and 2 (SRB). • Max ARP Hop Count—Maximum number of hops for ARE frames processed by this TrCRF. Possible values are 1 through 13. The default is 7. • Max STE Hop Count—Maximum number of hops for STE frames processed by this TrCRF. Possible values are 1 through 13. The default is 7. • Backup CRF Mode—Whether the TrCRF is configured as a backup. Possible values are 1 (TrCRF is configured as a backup) and 2 (TrCRF is not configured as a backup).

STP BPDU Frame Formats

The format of a STP BPDU frame varies depending on the type of protocol used.

Figure A-11 shows the format of an IEEE 802.1d STP BPDU frame.

Figure A-11 IEEE 802.1d STP BPDU Frame Format

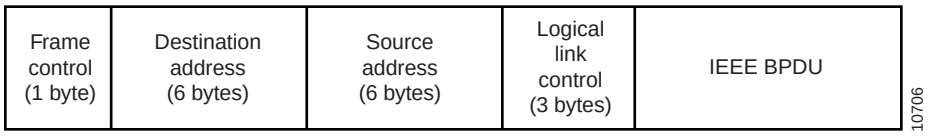


Figure A-12 shows the format of an IBM STP BPDU frame.

Figure A-12 IBM STP BPDU Frame Format

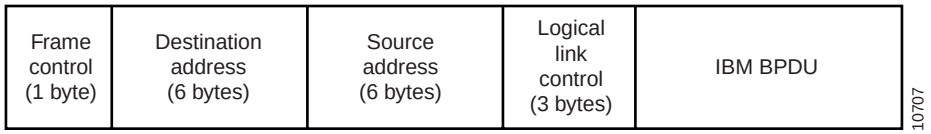
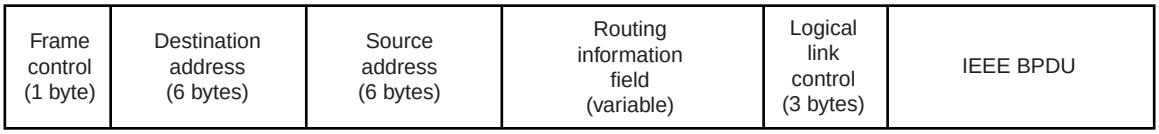


Figure A-13 shows the format of a Cisco STP BPDU frame.

Figure A-13 Cisco STP BPDU Frame Format



Frame Control

The Frame Control field is always 01.

Destination Address

The Destination Address field indicates the destination address as specified in the Bridge Group Address table. For IEEE STP BPDU frames, the address is 0x800143000000. For IBM STP BPDU frames, the address is 0xC00000000100. For Cisco STP BPDU frames, the address is 0x800778020200.

Source Address

The Source Address field indicates the base MAC address used by the switch. For Cisco STP BPDU frames, the multicast bit is set to indicate the presence of a RIF in the header.

Routing Information Field

Applicable only to Cisco STP BPDU frames, the Routing Information field must be set to 0x0200.

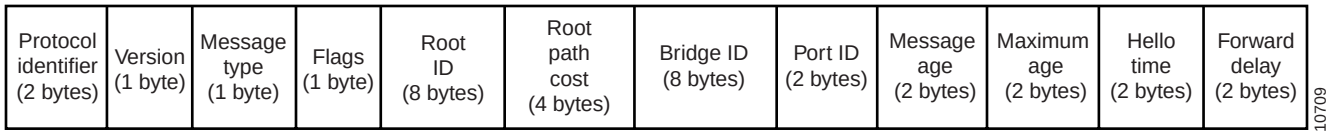
Logical Link Control

For all three types of STP BPDU frames, this field is set to 0x424203.

BPDU

Figure A-13 shows the format of the fields inside a BPDU.

Figure A-14 BPDU Field Formats



Note: All fields in the BPDU are common to all STPs except for the Port ID field. For IEEE and Cisco STP BPDU frames, the Port ID field specifies the transmitting port number of the originating bridge. For IBM STP BPDU frames, the Port ID field specifies the ring and bridge number through which the message was sent.

Protocol Identifier

The Protocol Identifier Field indicates the type of protocol. This field contains the value zero.

Version

The Version field indicates the version of the protocol. This field contains the value zero.

Message Type

The Message Type field indicates the type of message. This field contains the value zero.

Flags

The Flags field includes one of the following:

- Topology change (TC) bit, which signals a topology change
- Topology change acknowledgment (TCA) bit, which is set to acknowledge receipt of a configuration message with the TC bit set.

Root ID

The Root ID field indicates the root bridge by listing its 2-byte priority followed by its 6-byte ID.

Root Path Cost

The Root Path Cost field indicates the cost of the path from the bridge sending the configuration message to the root bridge.

Bridge ID

The Bridge ID field indicates the priority and ID of the bridge sending the message.

Port ID

The Port ID field indicates the port number (IEEE or Cisco STP BPDU) or the ring and bridge number (IBM STP BPDU) from which the configuration message was sent. This field allows loops created by multiple attached bridges to be detected and corrected.

Message Age

The Message Age field indicates the amount of time that has elapsed since the root sent the configuration message on which the current configuration message is based.

Maximum Age

The Maximum Age field indicates when the current configuration message should be deleted.

Hello Time

The Hello Time field indicates the time between root bridge configuration messages.

Forward Delay

The Forward Delay field indicates the length of time that bridges should wait before transitioning to a new state after a topology change. If a bridge transitions too soon, it is possible that not all network links will be ready to change their state and loops can result.

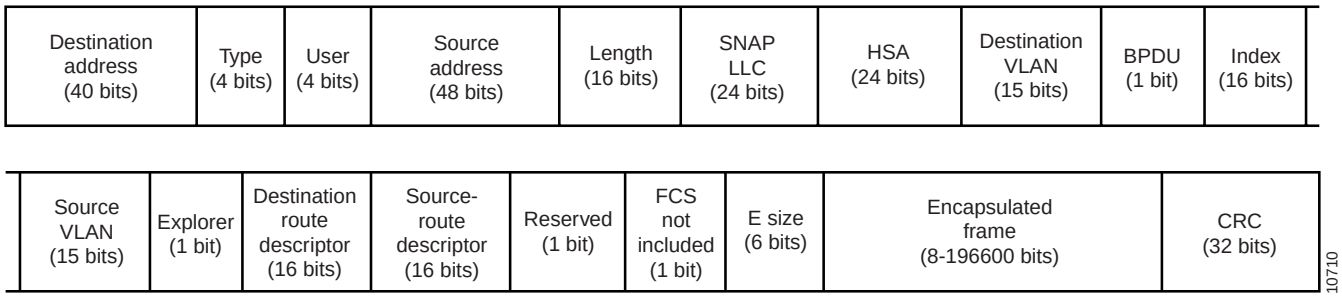
ISL Token Ring Frame Format

To support Token Ring, another ISL frame format was developed. In addition to the fields found in the original ISL frame format, the ISL Token Ring Frame format includes:

- An extra 6 byte header.
- The routing information field scanning results.
- The source VLAN ID.
- A size indicator.
- A flag for the type of explorer.

Figure A-13 shows the format of an ISL Token Ring frame.

Figure A-15 ISL Token Ring Frame Format



Destination Address

The Destination Address field is a 40-bit multicast address and is set to 0x01000C0000

Type

The Type field indicates the type of frame that is encapsulated. For Token Ring frames, this field is set to 0001.

User

The User field extends the meaning of the Type field. For example, Token Ring frames may have more than one type. The default User field value is 0000.

Source Address

The Source Address field indicates the 802.3 MAC address of the MAC transmitting the frame.

Length

The Length field indicates the length, in bytes, of the frame excluding the Destination Address, Type, User, Source Address, Length, and CRC fields.

SNAP LLC

The SNAP LLC of the frame. For ISL frames this field is set to AAAA03.

HSA

The HSA (high bits of source address) field indicates the upper 3 bytes, which identifies the manufacturer, of the Source Address field.

Destination VLAN

The Destination VLAN field indicates the ID of VLAN for which the packet is destined. This value is used to distinguish frames on different VLANs. This field is often referred to as the *color* of the packet.

BPDU

The BPDU field indicates whether the encapsulated frame is a BPDU. This field is also used to indicate whether the encapsulated frame is a CDP or VTP frame. All frames received with this field set are forwarded to the CPU for processing.

Index

The Index field indicates the port index of the source of the frame as it comes out from the Catalyst switch. It is used for diagnostic purposes only and may be set to any value by other devices.

Source VLAN

The Source VLAN field indicates the ID of VLAN from which the packet was sent.

Explorer

The Explorer field indicates whether the encapsulated frame is a data frame or and explorer (ARE or STE) frame.

Destination Route Descriptor

The Destination Route Descriptor field indicates the route descriptor to be used for forwarding. If there is no route descriptor following the routing information field match in the routing information field or if there is no routing information field present in the frame, this field is set to 0 and the destination address is used for forwarding.

Source-Route Descriptor

The Source Route Descriptor field indicates the route descriptor to be used for source learning. If there is no route descriptor prior to the ring-in in the routing information field or if there is no routing information field present in the frame, this field is set to 0 and the source address is used for source learning.

FCS Not Included

The FCS Not Included field indicates whether the Frame Check Sequence field is included in the Encapsulated Frame field.

E Size

The E Size field indicates the frame size for frames less than 64 bytes. This field is use to account for the case where a frame crosses a router and is padded to 64 bytes (minimum Ethernet frame).

Encapsulated Frame

The actual Token Ring frame. For more information on the format of the Token Ring frame, see the "Token Ring Frame Format" section.

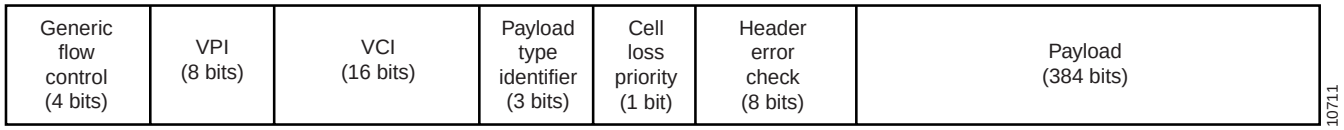
CRC

The CRC field is the frame checksum. This CRC is in addition to the one at the end of the Encapsulate Frame field. It contains a standard 32-bit CRC value calculated on the entire encapsulated frame from the Destination Address field to the Encapsulated Frame field. The receiving device checks this CRC and may discard packets that do not have a valid CRC on them.

ATM Cell Format

The ATM cell is a fixed-length, standard unit of data transmission for all cell relay services in an ATM network. The first five bytes of the ATM cell serve as the cell header. The cell header contains information essential to routing the cell through the network and ensuring that the cell reaches its destination. Figure A-13 shows the format of an ATM cell.

Figure A-16 ATM Cell Format



Generic Flow Control

The Generic Flow Control field is used when passing ATM traffic through a user-to-network (UNI) interface to alleviate short-term overload conditions. A network-to-network (NNI) interface does not use this field for generic flow control purposes; rather, an NNI uses this field to define a larger VPI value for trunking purposes.

VPI

The VPI field identifies the virtual paths. In an idle or null cell, the VPI field is set to all zeros. (A cell containing no information in the payload field is either idle or null). VPIs provide a way to bundle ATM traffic being sent to the same destination.

In an ATM UNI header, part of the VPI field (bits 5 through 8 of byte 1) is reserved as a generic flow control field. However, the ATM NNI header provides a larger range of VPI values (using bits 5 through 8 of byte 2, in addition to bits 1 through 4 of byte 1). This larger range of VPI values that can be defined in an ATM NNI cell header reflects the greater use of virtual paths in the network for trunking purposes between ATM inter-switch and ATM inter-network interfaces.

VCI

The VCI field identifies a particular VCC. In an idle or null cell (one containing no payload information), the VCI field is set to all zeros. Other non-zero values in this field are reserved for special purposes. For example, the combined values of VPI = 0 and VCI = 5 are used exclusively for ATM signaling purposes when requesting an ATM connection.

Payload Type Identifier

The Payload Type Identifier indicates the type of payload the cell contains: either user data or special network management data used to perform certain network operation, administration, and maintenance functions in the network.

Cell Loss Priority

The Cell Loss Priority field is set by the AAL to indicate the relative importance of a cell. This field is set to 1 to indicate that a cell can be discarded, if necessary, such as when an ATM switch is experiencing traffic congestion. This field is set to 1 to indicate that the cell should not be discarded, such as when supporting a specified or guaranteed quality of service. This field may also be set by the ATM layer if an ATM connection exceeds the QOS parameters established during connection setup.

Header Error Check

The Header Error Check field is an 8-bit CRC computed on all fields in an ATM UNI/NNI cell header. The header error check is capable of detecting all single-bit errors and certain multiple-bit errors. This field provides protection against incorrect message delivery caused by addressing errors. However, it provides no error protection for the ATM cell payload proper. The physical layer uses this field for cell delineation functions during data transport.