

# ICND2 – Frame Relay

## Question 1

What can be done to Frame Relay to resolve split-horizon issues?(Choose two)

- A. Disable Inverse ARP.
- B. Create a full-mesh topology.
- C. Develop multipoint subinterfaces.
- D. Configure point-to-point subinterfaces.
- E. Remove the broadcast keyword from the frame-relay map command.

**Answer:** B D

## Explanation

**SPLIT HORIZON:** A router never sends information about a route back in same direction which is original information came, routers keep track of where the information about a route came from. Means when router A sends update to router B about any failure network, router B does not send any update for same network to router A in same direction.

Therefore in order to resolve split-horizon issue, we can create a full-mesh topology (a network topology in which there is a direct link between all pairs of nodes) so that all the routers can learn all the routes advertised by the neighbors -> B is correct.

Configuring Point-to-point subinterfaces is a good way to resolve the split-horizon issue because each subinterface is treated as a separate interface so an interface can send and receive information about a route -> D is correct.

## Question 2

Which encapsulation type is a Frame Relay encapsulation type that is supported by Cisco routers?

- A. IETF
- B. ANSI Annex D
- C. Q9333-A Annex A
- D. HDLC

**Answer:** A

## Explanation

Cisco supports two Frame Relay encapsulation types: the **Cisco encapsulation** and the **IETF Frame Relay encapsulation**, which is in conformance with RFC 1490 and RFC 2427. The former is often used to connect two Cisco routers while the latter is used to connect a Cisco router to a non-Cisco router. You can test with your Cisco router when typing the command Router(config-if)#**encapsulation frame-relay ?** on a WAN link. Below is the output of this command (notice Cisco is the default encapsulation so it is not listed here, just press Enter to use it).

```
R1(config-if)#encapsulation frame-relay ?
  ietf Use RFC1490/RFC2427 encapsulation
  <cr>
```

Note: Three LMI options are supported by Cisco routers are ansi, Cisco, and Q933a. They represent the ANSI Annex D, Cisco, and ITU Q933-A (Annex A) LMI types, respectively.

HDLC is a WAN protocol same as Frame-Relay and PPP so it is not a Frame Relay encapsulation type.

### Question 3

What are two characteristics of Frame Relay point-to-point subinterfaces? (Choose two)

- A. They create split-horizon issues.
- B. They require a unique subnet within a routing domain.
- C. They emulate leased lines.
- D. They are ideal for full-mesh topologies.
- E. They require the use of NBMA options when using OSPF.

**Answer:** B C

### Question 4

What is the result of issuing the **frame-relay map ip 192.168.1.2 202 broadcast** command?

- A. defines the destination IP address that is used in all broadcast packets on DLCI 202
- B. defines the source IP address that is used in all broadcast packets on DLCI 202
- C. defines the DLCI on which packets from the 192.168.1.2 IP address are received
- D. defines the DLCI that is used for all packets that are sent to the 192.168.1.2 IP address

**Answer:** D

### Question 5

What does the frame-relay interface-dlci command configure?

- A. local DLCI on the subinterface
- B. remote DLCI on the main interface
- C. remote DLCI on the subinterface
- D. local DLCI on the main interface

**Answer:** A

### Explanation

When configuring on a point-to-point subinterface, the command **frame-relay interface-dlci** associates the selected point-to-point subinterface with a DLCI. But remember that the DLCI number in this command is the local DLCI. An example of using this command is shown below:

```
R1(config)#interface Serial0/0.1 point-to-point
R1(config-subif)#ip address 192.168.1.1 255.255.255.252
R1(config-subif)#frame-relay interface-dlci 1
R1(config-fr-dlci)#exit
```

### Question 6

What command is used to verify the DLCI destination address in a Frame Relay static configuration?

- A. show frame-relay pvc
- B. show frame-relay lmi
- C. show frame-relay map
- D. show frame relay end-to-end

**Answer:** C

### Explanation

An example of the output of "show frame-relay map" command is shown below:

```
R1# show frame-relay map
Serial0/0 (up): ip 172.16.3.1 dlc1 100 (0x64, 0x1840), dynamic
                broadcast, status defined, active
```

We can see the IP address 172.16.3.1 is associated with the DLCI 100.

### Question 7

What occurs on a Frame Relay network when the CIR is exceeded?

- A. All TCP traffic is marked discard eligible.
- B. All UDP traffic is marked discard eligible and a BECN is sent.
- C. All TCP traffic is marked discard eligible and a BECN is sent.
- D. All traffic exceeding the CIR is marked discard eligible.

**Answer:** D

### Explanation

Committed information rate (CIR): The minimum guaranteed data transfer rate agreed to by the Frame Relay switch. Frames that are sent in excess of the CIR are marked as discard eligible (DE) which means they can be dropped if the congestion occurs within the Frame Relay network.

Note: In the Frame Relay frame format, there is a bit called Discard eligible (DE) bit that is used to identify frames that are first to be dropped when the CIR is exceeded.

### Question 8

What is the purpose of Inverse ARP?

- A. to map a known IP address to a MAC address
- B. to map a known DLCI to a MAC address
- C. to map a known MAC address to an IP address
- D. to map a known DLCI to an IP address
- E. to map a known IP address to a SPID
- F. to map a known SPID to a MAC address

**Answer:** D

### Question 9

What is the advantage of using a multipoint interface instead of point-to-point subinterfaces when configuring a Frame Relay hub in a hub-and-spoke topology?

- A. It avoids split-horizon issues with distance vector routing protocols.
- B. IP addresses can be conserved if VLSM is not being used for subnetting.
- C. A multipoint interface offers greater security compared to point-to-point subinterface configurations.
- D. The multiple IP network addresses required for a multipoint interface provide greater addressing flexibility over point-to-point configurations.

**Answer:** B

### Explanation

A main advantage of configuring Frame Relay multipoint compared to point-to-point subinterfaces is we can assign IP addresses on the same subnets/networks to the interfaces of Frame Relay switch, thus saving the subnets/networks you have.

### Question 10

Which command allows you to verify the encapsulation type (CISCO or IETF) for a frame relay link?

- A. show frame-relay map
- B. show frame-relay lmi
- C. show inter serial
- D. show frame-relay pvc

**Answer:** A

### Explanation

The "show frame-relay map" command displays the current map entries and information about the connections, including encapsulation type.

You can check Table 33 in the following

link: [http://www.cisco.com/en/US/docs/ios/12\\_2/wan/command/reference/wrffr4.html#wp1029343](http://www.cisco.com/en/US/docs/ios/12_2/wan/command/reference/wrffr4.html#wp1029343)

It clearly states there is a Field which can be Cisco or IETF, which "indicates the encapsulation type for this map". We quote that Table 33 here for your quick reference (you will see what we want to imply in bold):

<b>Field</b>	<b>Description</b>
Serial 1 (administratively down)	Identifies a Frame Relay interface and its status (up or down).
ip 131.108.177.177	Destination IP address.

dlci 177 (0xB1,0x2C10)	DLCI that identifies the logical connection being used to reach this interface. This value is displayed in three ways: its decimal value (177), its hexadecimal value (0xB1), and its value as it would appear on the wire (0x2C10).
static	Indicates whether this is a static or dynamic entry.
CISCO	<b>Indicates the encapsulation type for this map; either CISCO or IETF.</b>
TCP/IP Header Compression (inherited), passive (inherited)	Indicates whether the TCP/IP header compression characteristics were inherited from the interface or were explicitly configured for the IP map.

The "show frame-relay lmi" gives us information about the LMI encapsulation type used by the Frame Relay interface, which can be ANSI, CISCO or Q933a. Therefore it is not what the question requires (CISCO or IETF).