Cisco

Exam 200-101

Interconnecting Cisco Networking Devices Part 2

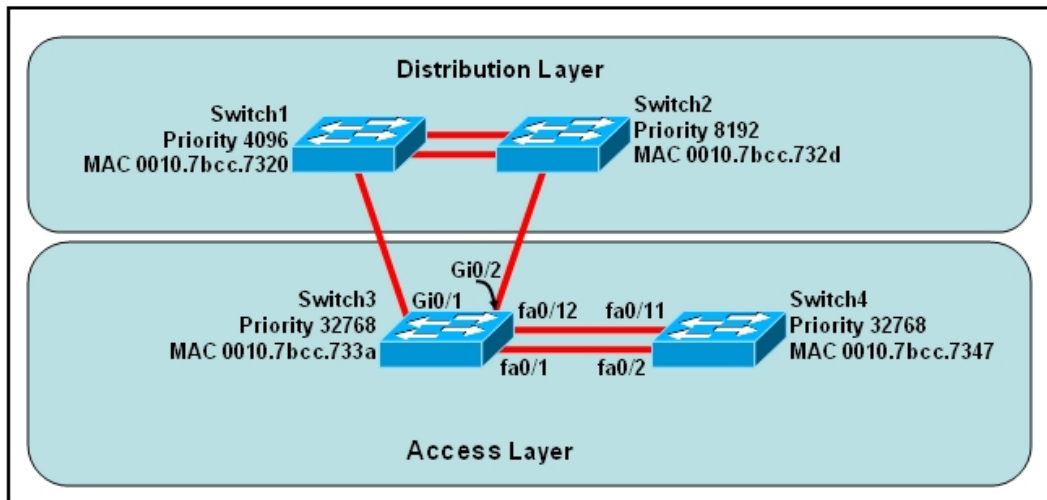**Version: 10.0**

[Total Questions: 149]

Topic break down

Topic	No. of Questions
Topic 1: LAN Switching Technologies	18
Topic 2: IP Routing Technologies	36
Topic 3: IP Services	4
Topic 4: Troubleshooting	10
Topic 5: WAN Technologies	50
Topic 6: Mix Questions	31

Topic 1, LAN Switching Technologies

Question No : 1 - (Topic 1)

Refer to the exhibit.

At the end of an RSTP election process, which access layer switch port will assume the discarding role?

A. Switch3, port fa0/1
B. Switch3, port fa0/12
C. Switch4, port fa0/11
D. Switch4, port fa0/2
E. Switch3, port Gi0/1
F. Switch3, port Gi0/2

Answer: C

Explanation: In this question, we only care about the Access Layer switches (Switch3 & 4). Switch 3 has a lower bridge ID than Switch 4 (because the MAC of Switch3 is smaller than thatof Switch4) so both ports of Switch3 will be in forwarding state. The alternative port will surely belong to Switch4.

Switch4 will need to block one of its ports to avoid a bridging loop between the two switches. But how does Switch4 select its blocked port? Well, the answer is based on the BPDUs it receives from Switch3. A BPDU is superior than another if it has:

1. A lower Root Bridge ID2. A lower path cost to the Root3. A lower Sending Bridge ID4. A lower Sending Port ID

These four parameters are examined in order. In this specific case, all the BPDUs sent by

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Switch3 have the same Root Bridge ID, the same path cost to the Root and the same Sending Bridge ID. The only parameter left to select the best one is the Sending Port ID (Port ID = port priority + port index). In this case the port priorities are equal because they use the default value, so Switch4 will compare port index values, which are unique to each port on the switch, and because Fa0/12 is inferior to Fa0/1, Switch4 will select the port connected with Fa0/1 (of Switch3) as its root port and block the other port -> Port fa0/11 of Switch4 will be blocked (discarding role)

Question No : 2 - (Topic 1)

At which layer of the OSI model is RSTP used to prevent loops?

A. physical
B. data link
C. network
D. transport

Answer: B

Explanation: RSTP and STP operate on switches and are based on the exchange of Bridge Protocol Data Units (BPDUs) between switches. One of the most important fields in BPDUs is the Bridge Priority in which the MAC address is used to elect the Root Bridge , RSTP operates at Layer 2.http://www.cisco.com/en/US/tech/tk389/tk621/technologies_white_paper09186a0080094 cfa.shtml

Question No : 3 - (Topic 1)

Refer to the exhibit.

```
Switch# show spanning-tree vlan 30
VLAN0030
Spanning tree enabled protocol rstp
Root ID Priority 24606
Address 00d0.047b.2800
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Bridge ID Priority 24606 (priority 24576 sys-id-ext 30)
Address 00d0.047b.2800
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300
Interface      Role  Sts   Cost   Prio.Nbr     Type
---------      ----------   ---   -------     ----- ----------
Fa1/1          Desg FWD     4     128.1        p2p
Fa1/2          Desg FWD     4     128.2        p2p
Fa5/1          Desg FWD     4     128.257      p2p
```

The output that is shown is generated at a switch. Which three statements are true?
(Choose three.)

A. All ports will be in a state of discarding, learning, or forwarding.
B. Thirty VLANs have been configured on this switch.
C. The bridge priority is lower than the default value for spanning tree.
D. All interfaces that are shown are on shared media.
E. All designated ports are in a forwarding state.
F. This switch must be the root bridge for all VLANs on this switch.

Answer: A,C,E

Explanation:

From the output, we see that all ports are in Designated role (forwarding state) -> A and E are correct.

The command "show spanning-tree vlan 30 only shows us information about VLAN 30. We don't know how many VLAN exists in this switch -> B is not correct.

The bridge priority of this switch is 24606 which is lower than the default value bridge priority 32768 -> C is correct.

All three interfaces on this switch have the connection type "p2p", which means Point-to-point environment – not a shared media -> D is not correct.

The only thing we can specify is this switch is the root bridge for VLAN 3o but we can not guarantee it is also the root bridge for other VLANs -> F is not correct.

Question No : 4 - (Topic 1)

Which two states are the port states when RSTP has converged? (Choose two.)

A. discarding
B. listening
C. learning
D. forwarding
E. disabled

Answer: A,D

Explanation:

Understanding Rapid Spanning Tree Protocol (802.1w)

http://www.cisco.com/en/US/tech/tk389/tk621/technologies_white_paper09186a0080094cfa.shtml

Port States
There are only three port states left in RSTP that correspond to the three possible operational states. The 802.1D disabled, blocking, and listening states are merged into a unique 802.1w discarding state.
RSTP only has 3 port states which are discarding, learning and forwarding. When RSTP has converged there are only 2 port states left: discarding and forwarding.

STP (802.1D) Port State	RSTP (802.1w) Port State	Is Port Included in Active Topology?	Is Port Learning MAC Addresses?
Disabled	Discarding	No	No
Blocking	Discarding	No	No
Listening	Discarding	Yes	No
Learning	Learning	Yes	Yes
Forwarding	Forwarding	Yes	Yes

Question No : 5 - (Topic 1)

Refer to the exhibit

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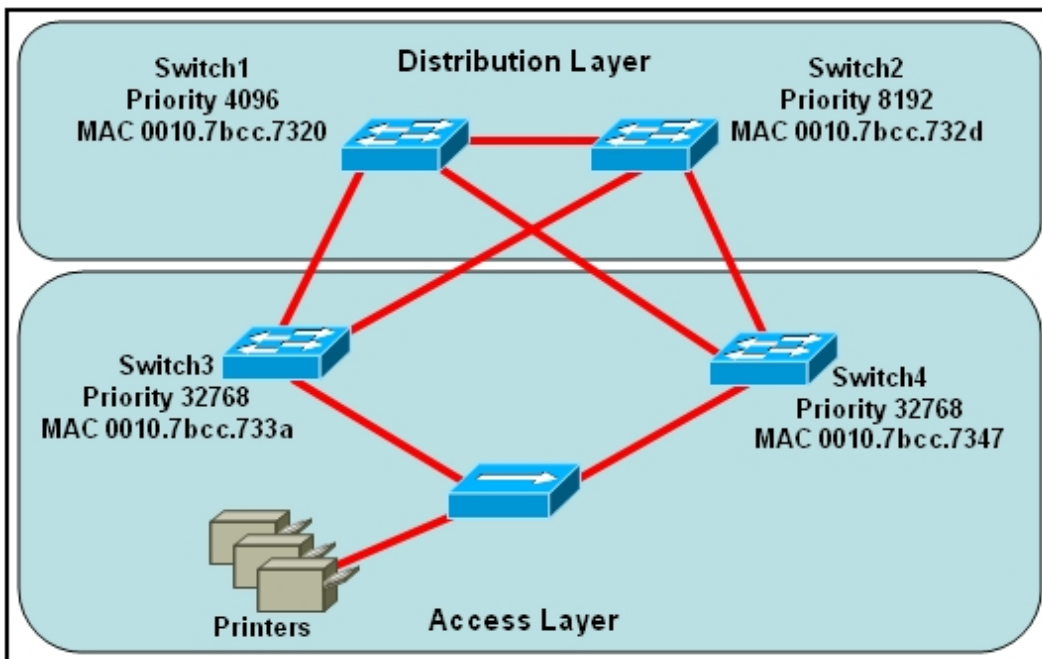
Which switch provides the spanning-tree designated port role for the network segment that services the printers?

A. Switch1
B. Switch2
C. Switch3
D. Switch4

Answer: C

Explanation:

First, the question asks what switch services the printers, so it can be Switch 3 or Switch 4 which is connected directly to the Printers.

Designated port is a port that is in the forwarding state. All ports of the root bridge are designated ports.

Switch 3 and Switch 4 has same priority so it will see on lowest MAC address and here switch 3 has lowest MAC address. So switch 3 segment will play a Designated port role.

By comparing the MAC address of Switch 3 and Switch 4 we found that the MAC of Switch 3 is smaller. Therefore the interface connected to the Printers of Switch 3 will become designated interface and the interface of Switch 4 will be blocked.

Question No : 6 - (Topic 1)

Which three of these statements regarding 802.1Q trunking are correct? (Choose three.)

A. 802.1Q native VLAN frames are untagged by default.
B. 802.1Q trunking ports can also be secure ports.
C. 802.1Q trunks can use 10 Mb/s Ethernet interfaces.
D. 802.1Q trunks require full-duplex, point-to-point connectivity.
E. 802.1Q trunks should have native VLANs that are the same at both ends.

Answer: A,C,E

Explanation:
CCNA Self-Study (ICND Exam): Extending Switched Networks with Virtual LANs
http://www.ciscopress.com/articles/article.asp?p=102157&seqNum=2

Question No : 7 - (Topic 1)

Which port state is introduced by Rapid-PVST?

A. learning
B. listening
C. discarding
D. forwarding

Answer: C

Explanation:
Spanning Tree from PVST+ to Rapid-PVST Migration Configuration Example
Reference 1:
http://www.cisco.com/en/US/products/hw/switches/ps708/products_configuration_example
09186a00807b0670.shtml

Reference 2:
http://www.cisco.com/en/US/tech/tk389/tk621/technologies_white_paper09186a0080094cf
a.shtml

PVST+ is based on IEEE802.1D Spanning Tree Protocol (STP). But PVST+ has only 3 port states (discarding, learning and forwarding) while STP has 5 port states (blocking, listening, learning, forwarding and disabled). So discarding is a new port state in PVST+.

STP (802.1D) Port State	RSTP (802.1w) Port State	Is Port Included in Active Topology?	Is Port Learning MAC Addresses?
Disabled	Discarding	No	No
Blocking	Discarding	No	No
Listening	Discarding	Yes	No
Learning	Learning	Yes	Yes
Forwarding	Forwarding	Yes	Yes

Background Information

802.1D Spanning Tree Protocol (STP) has a drawback of slow convergence. Cisco Catalyst switches support three types of STPs, which are PVST+, rapid-PVST+ and MST. PVST+ is based on IEEE802.1D standard and includes Cisco proprietary extensions such as BackboneFast, UplinkFast, and PortFast. Rapid-PVST+ is based on IEEE 802.1w standard and has a faster convergence than 802.1D. RSTP (IEEE 802.1w) natively includes most of the Cisco proprietary enhancements to the 802.1D Spanning Tree, such as BackboneFast and UplinkFast. Rapid-PVST+ has these unique features:

Uses Bridge Protocol Data Unit (BPDU) version 2 which is backward compatible with the 802.1D STP, which uses BPDU version 0.
All the switches generate BPDUs and send out on all the ports every 2 seconds, whereas in 802.1D STP only the root bridge sends the configuration BPDUs.
Port Roles—Root port, designated port, alternate port and backup port.
Port States—Discarding, Learning, and Forwarding.
Port Types—Edge Port (PortFast), Point-to-Point and Shared port.
Rapid-PVST uses RSTP to provide faster convergence. When any RSTP port receives legacy 802.1D BPDU, it falls back to legacy STP and the inherent fast convergence benefits of 802.1w are lost when it interacts with legacy bridges.

Question No : 8 - (Topic 1)

What is one benefit of PVST+?

A. PVST+ supports Layer 3 load balancing without loops.
B. PVST+ reduces the CPU cycles for all the switches in the network.
C. PVST+ allows the root switch location to be optimized per VLAN.
D. PVST+ automatically selects the root bridge location, to provide optimized bandwidth usage.

Answer: C

Explanation:
Per VLAN Spanning Tree (PVST)
Introduction
http://www.cisco.com/en/US/tech/tk389/tk621/tk846/tsd_technology_support_sub-protocol_home.html

Per VLAN Spanning Tree (PVST) maintains a spanning tree instance for each VLAN configured in the network. This means a switch can be the root bridge of a VLAN while another switch can be the root bridge of other VLANs in a common topology. For example, Switch 1 can be the root bridge for Voice data while Switch 2 can be the root bridge for Video data. If designed correctly, it can optimize the network traffic.
http://www.ciscopress.com/articles/article.asp?p=102157&seqNum=4

Question No : 9 - (Topic 1)

Which three statements about RSTP are true? (Choose three.)

A. RSTP significantly reduces topology reconverging time after a link failure.
B. RSTP expands the STP port roles by adding the alternate and backup roles.
C. RSTP port states are blocking, discarding, learning, or forwarding.
D. RSTP provides a faster transition to the forwarding state on point-to-point links than STP does.
E. RSTP also uses the STP proposal-agreement sequence.
F. RSTP uses the same timer-based process as STP on point-to-point links.

Answer: A,B,D
Explanation: