# NetApp NS0-093 Practice Questions

**Shared by Rojas on 22-10-2026**

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## Question 1

Question Type: MultipleChoice

Which two of the following are field replaceable units (FRUs) on an AFF A220 system? (Choose two.)

### Options:

A- NVMEM battery
B- mSATA boot device
C- NVME Flash Cache feature
D- chassis fan

### Answer:

A, B

### Explanation:

A . NVMEM battery

Explanation: The NVMEM (Non-Volatile Memory) battery is a critical component for retaining data in case of a power failure. It is classified as a Field Replaceable Unit (FRU) in an AFF A220 system.

Replacement Notes:

Replacement can be performed by field engineers.

The system will typically alert you when the battery requires replacement.

B . mSATA boot device

Explanation: The mSATA (mini-SATA) boot device contains the ONTAP operating system and is also a FRU in the AFF A220. It is critical for the system's boot process and can be replaced if it becomes faulty.

Replacement Notes:

Boot devices are easily replaceable while ensuring ONTAP is reinstalled on the new device.

Why the Other Options Are Incorrect:

C . NVMe Flash Cache feature:

Incorrect. NVMe Flash Cache is not a physical FRU but a feature for accelerating read performance. It is implemented via software and NVMe-based SSDs, which are not specifically

field replaceable in AFF A220.

D . Chassis fan:

Incorrect. The AFF A220 does not classify chassis fans as FRUs. These are usually part of the cooling system, but their replacement may require system shutdown or is integrated into the design.

NetApp Hardware Documentation: AFF A220 Component Replacement Guide.

NetApp Knowledge Base: Articles on replacing NVMEM batteries and mSATA boot devices.

## Question 2

Question Type: MultipleChoice

An aggregate has experienced a multiple disk failure due to a failing I/O module (IOM). The module has been replaced and the aggregate is still failed.

What step can be taken to recover the aggregate?

### Options:

A- Use diskcopy from maintenance mode.
B- Run wafliron from the boot_menu.
C- Unfail the drives from maintenance mode.
D- Unfail the drives in the order that they failed from the clustershell

### Answer:

C

### Explanation:

When an aggregate fails due to multiple disk failures caused by a faulty I/O module (IOM), the first step after replacing the faulty IOM is to manually unfail the affected drives. This process is done in maintenance mode.

Steps to Recover the Aggregate:

Enter Maintenance Mode:

Reboot the node and interrupt the boot process to access maintenance mode.

Identify Failed Drives:

Use the command:

sql

Copy code

storage show disk --broken

This command lists all failed (broken) drives.

Unfail the Drives:

Use the following command for each failed drive:

php

Copy code

disk unfail <disk-name>

Reconstruct the Aggregate:

Once all drives are unfail, the system should begin reconstructing the RAID groups in the aggregate.

Why Other Options Are Incorrect:

A . Use diskcopy from maintenance mode:

Diskcopy is used for cloning or copying data between disks, not for recovering failed aggregates.

B . Run wafliron from the boot_menu:

wafliron is used to repair WAFL inconsistencies, but it does not help recover failed aggregates due to disk issues.

D . Unfail the drives in the order that they failed from the clustershell:

Drives must be unfail in maintenance mode, not from the clustershell.

NetApp's 'Aggregate and RAID Troubleshooting Guide' explains the process of recovering aggregates and using maintenance mode commands.

'ONTAP Disk Recovery Guide' outlines steps to unfail disks and recover RAID groups.

## Question 3

Question Type: MultipleChoice

During an ONTAP upgrade, nodeA1 fails to boot. You notice that it is loading the previous version of ONTAP software. What step can be taken to boot the node successfully?

### Options:

A- From the loader prompt of nodeA1, use setenv GX_PRIMARY_KERNEL_URL to point to the correct version of ONTAP software.
B- From the loader prompt of nodeA1, run boot_backup to run the correct version of ONTAP software.
C- From the clustershell of the partner, run system node image modify to point to the correct version of ONTAP software.
D- From the clustershell of nodeA1, run system node image modify to point to the correct version of ONTAP software.

### Answer:

A

### Explanation:

When a node fails to boot and loads the previous version of ONTAP, it usually indicates that the primary boot location is incorrect. To resolve this:

Steps to Boot the Correct ONTAP Version:

Enter the LOADER Prompt:

Interrupt the boot process to access the LOADER prompt.

Set the Primary Kernel URL:

Use the following command:

setenv GX_PRIMARY_KERNEL_URL <URL_to_correct_ONTAP_version>

Boot the Node:

Run the boot command to load the correct version.

Why Other Options Are Incorrect:

B . From the loader prompt of nodeA1, run boot_backup:

Booting the backup image may result in an outdated version of ONTAP, not the desired version.

C . From the clustershell of the partner, run system node image modify:

Modifications to the ONTAP image must be done from the LOADER prompt, not the clustershell.

D . From the clustershell of nodeA1, run system node image modify:

NodeA1 cannot load ONTAP, so this command cannot be run.

'ONTAP System Boot Guide' explains how to resolve boot issues using the LOADER prompt.

NetApp documentation on environment variables includes the use of GX_PRIMARY_KERNEL_URL.

## Question 4

Question Type: MultipleChoice

In a SAS stack of shelves, what is the topology of the connection between expander and disk?

### Options:

A- arbritrated loop
B- point-to-point
C- loop
D- ring

### Answer:

B

### Explanation:

In a SAS stack of shelves, the connection between the expander and the disk uses a point-to-point topology.

Key Details:

Point-to-Point:

Each SAS disk in a shelf connects directly to the expander using a dedicated channel. This ensures that communication between the disk and expander is independent of other disks, improving performance and reliability.

Why SAS Uses Point-to-Point:

SAS (Serial Attached SCSI) eliminates the shared bandwidth limitations of traditional bus architectures (e.g., arbitrated loop or ring) by dedicating a connection to each device.

Why Other Options Are Incorrect:

A . arbitrated loop:

Arbitrated loop is a topology used in Fibre Channel systems, not SAS.

C . loop:

SAS does not use loop-based communication; this is typical of older technologies like SCSI Parallel Interface (SPI).

D . ring:

Ring topology is not used in SAS stacks.

'NetApp SAS Shelf and Disk Configuration Guide' specifies point-to-point communication between expanders and disks in SAS environments.

## Question 5

Question Type: MultipleChoice

Which two ONTAP systems support both SSD and SAS disks? (Choose two.)

### Options:

A- AFF C190
B- FAS2750
C- AFF A220
D- FAS8200

### Answer:

B, D

### Explanation:

The following ONTAP systems support both SSD and SAS disks:

1. FAS2750

Description:

The FAS2750 is part of NetApp's hybrid storage array product line.

It supports both SSDs for performance tiers and SAS disks for capacity tiers, making it suitable for mixed workloads.

2. FAS8200

Description:

The FAS8200 is an enterprise-level storage system that also supports hybrid configurations with both SSD and SAS drives.

This system is designed to handle high performance and capacity needs.

Why Other Options Are Incorrect:

A . AFF C190:

The AFF C190 is an all-flash system and only supports SSDs. It does not support SAS disks.

C . AFF A220:

Like the AFF C190, the AFF A220 is also an all-flash system that supports SSDs only.

NetApp 'Hardware Universe' confirms drive support for FAS and AFF systems.

NetApp product documentation details supported disk types for hybrid and all-flash systems.

## Question 6

Question Type: MultipleChoice

You have upgraded your cluster from ONTAP 9.5 software to ONTAP 9.7 software. After two days, you notice that the upgrade is causing issues. You decide to revert to ONTAP 9.5 software.

Which two actions do you need to complete before you revert? (Choose two.)

### Options:

A- Revert from ONTAP 9.7 software to ONTAP 9.6 software and then to ONTAP 9.5 software.
B- Delete all Snapshot copies from the past two days.
C- Reinstall your boot media and install ONTAP 9.5 software.

D- Wipe your config and restore from backup.

## Answer:

C, D

## Explanation:

Reverting to a previous ONTAP version requires careful preparation because ONTAP upgrades often introduce irreversible changes. To successfully revert, the following actions are needed:

C . Reinstall your boot media and install ONTAP 9.5 software

Explanation: You need to reinstall the older version of ONTAP (9.5) on the boot media because the current version (9.7) has been installed as part of the upgrade. The reinstallation ensures that the system boots with ONTAP 9.5.

Steps:

Boot the node into maintenance mode.

Perform the reinstallation using the appropriate ONTAP 9.5 image.

D . Wipe your config and restore from backup

Explanation: A revert requires wiping the configuration because ONTAP upgrades may have made changes to the cluster configuration or WAFL metadata. Restoring the configuration from a backup ensures consistency with the older ONTAP version.

Steps:

Back up the current cluster configuration before proceeding.

Use the restored backup after the revert is complete to reconfigure the system.

Why the Other Options Are Incorrect:

A . Revert from ONTAP 9.7 software to ONTAP 9.6 software and then to ONTAP 9.5 software:

Incorrect. ONTAP reverts must directly target the desired version. You cannot perform multi-step reverts.

B . Delete all Snapshot copies from the past two days:

Incorrect. Deleting Snapshot copies is not a prerequisite for reverting ONTAP. While older Snapshot copies might not be compatible with the reverted version, they do not need to be deleted before the revert.

NetApp Documentation: ONTAP Upgrade and Revert Procedures.

NetApp Knowledge Base: Steps for reinstallation and configuration restoration during a revert.

## Question 7

Question Type: MultipleChoice

On an AFF A700 system, a SAS stack is connected to SAS ports 2a and 2b. The system has an additional 4-port SAS card in slot 9.

How should the cabling the corrected for best practices?

### Options:

A- Use port 2a and 9a.
B- Use port 2a and 9b.
C- Use port 2a and 2c.
D- Use port 2b and 9d.

### Answer:

A

### Explanation:

Best Practices for SAS Cabling in AFF A700 Systems:

The AFF A700 system has built-in SAS ports (e.g., 2a and 2b) as well as additional SAS ports on optional SAS cards.

To ensure high availability and redundancy, it is recommended to distribute SAS connections across multiple SAS ports from different controllers or slots.

Why Port 2a and 9a Are Recommended:

Port 2a is a built-in SAS port on the AFF A700 system.

Port 9a belongs to the additional SAS card in slot 9.

By connecting the stack using 2a and 9a, you utilize different SAS domains (built-in controller ports and add-on card ports), providing both path redundancy and load balancing.

NetApp Reference Documentation:

'NetApp Hardware Universe' and 'ONTAP Hardware Installation Guide' highlight that SAS cabling for redundancy should leverage different ports, including those from separate SAS

controllers or add-on cards.

NetApp's best practice guidelines suggest avoiding connections to the same SAS controller or port group for critical stacks.

## Question 8

Question Type: MultipleChoice

A SAS connection is reporting a single PHY down.

What are the two most likely causes? (Choose two.)

### Options:

A- improperly seated cable
B- outdated I/O module (IOM1 firmware
C- defective cable
D- an offline shelf in the stack

### Answer:

A, C

### Explanation:

Understanding a Single PHY Down Issue:

In SAS environments, a PHY represents a physical layer connection between devices.

When a single PHY reports a 'down' status, it typically indicates an issue with the physical connectivity or the associated hardware.

Cause 1: Improperly Seated Cable

If the SAS cable is not properly seated in the port, the connection for one or more PHYs may fail.

Reseating the cable on both ends (controller and shelf) often resolves the issue.

Cause 2: Defective Cable

A damaged or faulty SAS cable can cause PHY errors.

Replacing the cable and verifying the connection resolves the issue in this case.

Why Other Options Are Not Likely:

B . Outdated IOM firmware: While outdated firmware can cause other issues, it rarely affects only a single PHY.

D . Offline shelf: If an entire shelf is offline, more than one PHY would typically be affected, as multiple connections are involved in SAS stacks.

NetApp Reference Documentation:

Found in the 'ONTAP SAS Cabling Guide' and 'Shelf Troubleshooting Guide'. These documents detail troubleshooting for PHY errors and common SAS hardware issues.

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## Question 9

Question Type: MultipleChoice

In which two sections of AutoSupport can you find information to analyze the following panic? (Choose two.)

Panic_Message: PCI Error NMI from device(s):ErrSrcID(CorrSrc(0xf00),UCorrSrc(0x18)), RPT(0,3,0):Qlogic FC 16G adapter in slot 1 on Controller

### Options:

A- HA-RASTRACE.TGZ
B- ALL-COREDUMP.XML
C- SSRAM-LOG
D- PCI-HIERARCHY.XML

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### Answer:

A, C

### Explanation:

To analyze the provided panic error, the two sections of AutoSupport that are essential for investigation are:

1. HA-RASTRACE.TGZ

What it is: HA-RASTRACE.TGZ contains HA (High Availability) system trace logs. It records

hardware diagnostics, error traces, and the HA system's response to hardware events. These logs are critical when analyzing hardware-related panics, including those caused by PCI errors.

Why it's relevant to the panic: In the given panic message, the NMI (Non-Maskable Interrupt) error originates from a Qlogic FC 16G adapter. HA-RASTRACE.TGZ will provide detailed diagnostics, including the error reporting from the HA interconnect and other hardware diagnostics. Specifically, it may include information about how the system detected the PCI fault and any actions taken to protect the system state.

How to analyze:

Extract the HA-RASTRACE.TGZ file from the AutoSupport bundle.

Review hardware-related trace messages for entries associated with the PCI bus or the Qlogic FC adapter.

Look for specific error codes or keywords like PCI Error, NMI, or Qlogic.

NetApp's 'AutoSupport Logs and Diagnostics Guide' highlights HA-RASTRACE.TGZ as a primary resource for debugging hardware faults.

The 'Panic Troubleshooting Guide' for ONTAP systems specifies HA-RASTRACE as a key source for identifying NMI-related errors.

2. SSRAM-LOG

What it is: SSRAM-LOG records low-level hardware error details, including PCI device register states and uncorrectable memory errors. It is particularly useful for analyzing errors originating in peripheral hardware like network or storage adapters connected via PCI.

Why it's relevant to the panic: The panic message explicitly references a PCI Error NMI caused by a Qlogic FC adapter. SSRAM-LOG captures detailed state information for PCI devices, which can help identify whether the fault originated in the adapter hardware, the PCI bus, or another related component.

How to analyze:

Extract the SSRAM-LOG from the AutoSupport bundle.

Search for PCI-related errors, including the specific error source IDs (e.g., ErrSrcID(CorrSrc(0xf00),UCorrSrc(0x18))).

Review the log entries to confirm the root cause of the NMI.

The 'Hardware Diagnostics and Troubleshooting Guide for ONTAP' lists SSRAM-LOG as a key file for debugging PCI errors.

NetApp's documentation on PCI diagnostics emphasizes the use of SSRAM-LOG for validating hardware-level faults.

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