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NVIDIA NCP-AIN Exam

NVIDIA-Certified Professional AI Networking

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The second format of NVIDIA-Certified Professional AI Networking (NCP-AIN) is the web-based practice exam that can be taken online through browsers like Firefox, Chrome, Safari, MS Edge, Internet Explorer, and Microsoft Edge. You don't need to install any excessive plugins or Software to attempt the web-based Practice NCP-AIN Exam. All operating systems also support

the web-based practice exam.

NVIDIA NCP-AIN Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none">• Spectrum-X Configuration, Optimization, Security, and Troubleshooting: This section of the exam measures the skills of Network Performance Engineers and covers configuring, managing, and securing NVIDIA Spectrum-X switches. It includes setting performance baselines, resolving performance issues, and using diagnostic tools such as CloudAI benchmark, NCCL, and NetQ. It also emphasizes leveraging DPUs for network acceleration and using monitoring tools like Grafana and SNMP for telemetry analysis.
Topic 2	<ul style="list-style-type: none">• InfiniBand Configuration, Optimization, Security, and Troubleshooting: This section of the exam measures the skills of Data Center Network Administrators and covers the configuration and operational maintenance of NVIDIA InfiniBand switches. It includes setting up InfiniBand fabrics for multi-tenant environments, managing subnet configurations, testing connectivity, and using UFM to troubleshoot and analyze issues. It also focuses on validating rail-optimized topologies for optimal network performance.
Topic 3	<ul style="list-style-type: none">• AI Network Architecture: This section of the exam measures the skills of AI Infrastructure Architects and covers the ability to distinguish between AI factory and AI data center architectures. It includes understanding how Ethernet and InfiniBand differ in performance and application, and identifying the right storage options based on speed, scalability, and cost to fit AI networking needs.

NVIDIA-Certified Professional AI Networking Sample Questions (Q39-Q44):

NEW QUESTION # 39

You're troubleshooting a Spectrum-X network and notice that the System Status LED on a switch is blinking for more than 5 minutes. What is the most likely cause of this issue?

- A. The switch is overheating
- B. The power supply unit is failing
- C. The Onyx software did not boot properly

Answer: C

Explanation:

According to the NVIDIA Spectrum-X Switch Operating System (SX_OS) Troubleshooting Guide, the System Status LED behavior is a critical indicator of the switch's internal operational state.

From the document:

"The System Status LED will blink green during system initialization. If the LED continues blinking for more than 5 minutes, it indicates that the Onyx OS has failed to load properly. The system may be stuck in the boot process, or the file system may be corrupted." This blinking LED beyond normal initialization time indicates that the system has either encountered a failure during software boot or is unable to transition from bootloader to the OS runtime environment (i.e., Onyx).

Key causes include:

- * Corrupted or missing system files.
- * Failed firmware or OS upgrade attempts.
- * Boot device (e.g., eMMC or SSD) issues or corrupted partitions.

Technically, during power-on:

- * The switch performs POST (Power-On Self Test).
- * Then the Onyx OS attempts to load from the boot partition.
- * If the Onyx OS kernel or root filesystem is invalid, the system halts boot, and the LED remains in a blinking state, as no successful OS load confirmation is triggered.

Remediation Steps (as per NVIDIA guide):

- * Access the switch through console and monitor boot logs.
- * Use ONIE recovery or re-flash a stable Onyx OS version.
- * Check system storage integrity using built-in diagnostics.

Exact Extract Reference:

Source: NVIDIA SX_OS 3.9.3000 Documentation

Topic: Troubleshooting System Status LED

Extract: "If the LED blinks for more than 5 minutes and the switch is not accessible via CLI, the Onyx software failed to load properly and recovery procedures must be initiated."

NEW QUESTION # 40

A major cloud provider is designing a new data center to support large-scale AI workloads, particularly for training large language models. They want to optimize their network architecture for maximum performance and efficiency.

Why is a rail-optimized topology considered a best practice for AI network architecture in this scenario?

- A. It prioritizes north-south traffic over east-west traffic for better internet connectivity.
- **B. It provides optimal GPU-to-GPU communication and reduces network interference between flows.**
- C. It maximizes the number of network hops to increase data redundancy.
- D. It simplifies network management by using a single large switch for all connections.

Answer: B

Explanation:

A rail-optimized topology is designed to enhance GPU-to-GPU communication by connecting each GPU's Network Interface Card (NIC) to a dedicated rail switch. This configuration ensures predictable traffic patterns and minimizes network interference between data flows, which is crucial for the performance of large-scale AI workloads, such as training large language models. By reducing contention and latency, this topology supports efficient and scalable AI training environments.

Reference Extracts from NVIDIA Documentation:

* "Rail-optimized network topology helps maximize all-reduce performance while minimizing network interference between flows."

* "A Rail Optimized Stripe Architecture provides efficient data transfer between GPUs, especially during computationally intensive tasks such as AI Large Language Models (LLM) training workloads, where seamless data transfer is necessary to complete the tasks within a reasonable timeframe."

NEW QUESTION # 41

When upgrading Cumulus Linux to a new version, which configuration files should be migrated from the old installation?

Pick the 2 correct responses below.

- **A. All files in /etc/cumulus/acl**
- B. All files in /etc
- C. All files in /etc/mix
- **D. All files in /etc/network**

Answer: A,D

Explanation:

Before upgrading Cumulus Linux, it's essential to back up configuration files to a different server. The /etc directory is the primary location for all configuration data in Cumulus Linux. Specifically, the following files and directories should be backed up:

* /etc/frr/ - Routing application (responsible for BGP and OSPF)

* /etc/hostname - Configuration file for the hostname of the switch

* /etc/network/ - Network configuration files, most notably /etc/network/interfaces and /etc/network/interfaces.d/

* /etc/cumulus/acl - Access control list configurations

Cumulus Linux is a network operating system used on NVIDIA Spectrum switches, including those in the Spectrum-X platform, to provide a Linux-based environment for Ethernet networking in AI and HPC data centers. When upgrading Cumulus Linux to a new version, it's critical to migrate specific configuration files to preserve network settings and ensure continuity. The question asks for the two configuration file locations that should be migrated from the old installation during an upgrade.

According to NVIDIA's official Cumulus Linux documentation, the key directories containing configuration files that should be migrated during an upgrade are /etc/cumulus/acl (for access control list configurations) and /etc/network (for network interface configurations). These directories store critical network settings that define the switch's behavior, such as ACL rules and interface settings, which must be preserved to maintain network functionality after the upgrade.

Exact Extract from NVIDIA Documentation:

"When upgrading Cumulus Linux, you must back up and migrate specific configuration files to ensure continuity of network settings. The following directories should be included in the backup:

* /etc/cumulus/acl: Contains access control list (ACL) configuration files that define packet filtering and security policies.

* /etc/network: Contains network interface configuration files, such as interfaces and ifupdown2 settings, which define the network interfaces and their properties. Back up these directories before upgrading and restore them after the new version is installed to

maintain consistent network behavior."-NVIDIA Cumulus Linux Upgrade Guide This extract confirms that options A and B are the correct answers, as /etc/cumulus/acl and /etc/network contain essential configuration files that must be migrated during a Cumulus Linux upgrade. These files ensure that ACL policies and network interface settings are preserved, which are critical for Spectrum-X configurations in AI networking environments.
Reference:Upgrading Cumulus Linux - NVIDIA Docs

NEW QUESTION # 42

You are designing a new AI data center for a research institution that requires high-performance computing for large-scale deep learning models. The institution wants to leverage NVIDIA's reference architectures for optimal performance. Which NVIDIA reference architecture would be most suitable for this high-performance AI research environment?

- A. NVIDIA Base Command Platform
- **B. NVIDIA DGX SuperPOD**
- C. NVIDIA LaunchPad
- D. NVIDIA DGX Cloud

Answer: B

Explanation:

The NVIDIA DGX SuperPOD is a turnkey AI supercomputing infrastructure designed for large-scale deep learning and high-performance computing workloads. It integrates multiple DGX systems with high-speed networking and storage solutions, providing a scalable and efficient platform for AI research institutions. The architecture supports rapid deployment and is optimized for training complex models, making it the ideal choice for environments demanding top-tier AI performance.

Reference:DGX SuperPOD Architecture - NVIDIA Docs

NEW QUESTION # 43

Which of the following NCCL environment variables enable SHARP aggregation with NCCL when using the NCCL-SHARP plugin?

Pick the 2 correct responses below

- **A. NCCL_COLLNET_ENABLE=1**
- B. NCCLSPECTRUM_ENABLE=1
- **C. NCCL_SHARP_AUTOINIT**
- D. NCCL_ALGO=CollNet

Answer: A,C

Explanation:

To enable SHARP (Scalable Hierarchical Aggregation and Reduction Protocol) aggregation using the NCCL-SHARP plugin, the following two environment variables are required:

* NCCL_COLLNET_ENABLE=1

Enables NCCL's support for CollNet (Collective Network) operations, including SHARP.

* NCCL_SHARP_AUTOINIT=1

Automatically initializes the SHARP plugin when available, activating SHARP-based collectives.

From the NVIDIA NCCL User Guide - SHARP Plugin Section:

"NCCL_COLLNET_ENABLE must be set to enable collective network acceleration features."

"NCCL_SHARP_AUTOINIT enables automatic SHARP plugin integration at NCCL runtime." Incorrect Options:

* B. NCCL_ALGO=CollNet- This variable controls the algorithm used for collectives but does not enable SHARP.

* C. NCCLSPECTRUM_ENABLE- This is not a documented NCCL variable.

Reference: NCCL SHARP Plugin Guide & NCCL User Guide - Environment Variables Section

NEW QUESTION # 44

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