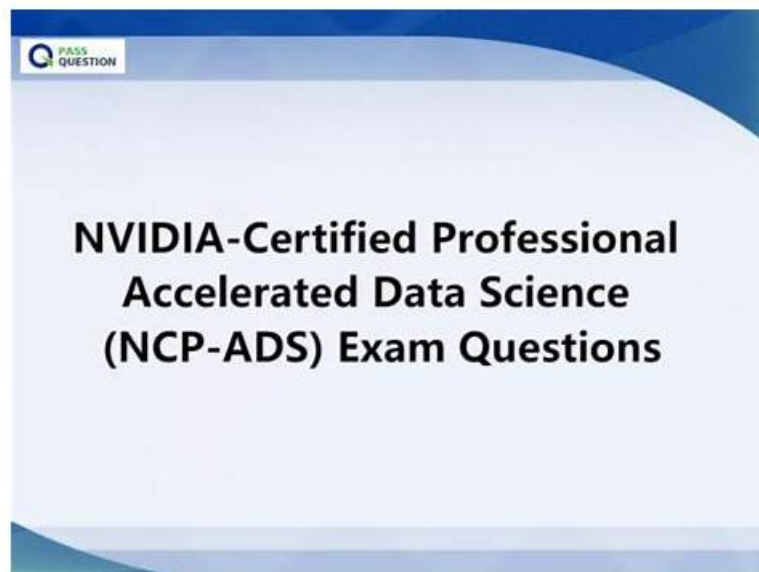


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## NCP-AIN Questions: NVIDIA-Certified Professional AI Networking



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### NVIDIA NCP-AIN Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none"><li>• <b>InfiniBand Configuration, Optimization, Security, and Troubleshooting:</b> 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.</li></ul>
Topic 2	<ul style="list-style-type: none"><li>• <b>Spectrum-X Configuration, Optimization, Security, and Troubleshooting:</b> 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.</li></ul>
Topic 3	<ul style="list-style-type: none"><li>• <b>AI Network Architecture:</b> 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.</li></ul>

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## 100% Pass Quiz NVIDIA - NCP-AIN - NVIDIA-Certified Professional AI Networking Pass-Sure Clearer Explanation

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### NVIDIA-Certified Professional AI Networking Sample Questions (Q40-Q45):

#### NEW QUESTION # 40

You are using NVIDIA Air to simulate a Spectrum-X network for AI workloads. You want to ensure that your network configurations are optimal before deployment.

Which NVIDIA tool can be integrated with Air to validate network configurations in the digital twin environment?

- A. Spectrum-X Manager
- B. DOCA
- C. NetQ
- D. GPU Cloud

**Answer: C**

Explanation:

NVIDIA NetQ is a highly scalable network operations toolset that provides visibility, troubleshooting, and validation of networks in real-time. It delivers actionable insights and operational intelligence about the health of data center networks—from the container or host all the way to the switch and port—enabling a NetDevOps approach.

NetQ can be used as the functional test platform for the network CI/CD in conjunction with NVIDIA Air.

Customers benefit from testing the new configuration with NetQ in the NVIDIA Air environment ("digital twin") and fix errors before deploying to their production.

#### NEW QUESTION # 41

You are automating the deployment of a Spectrum-X network using Ansible. You need to ensure that the playbooks can handle different switch models and configurations efficiently.

Which feature of the NVIDIA NVUE Collection helps simplify the automation by providing pre-built roles for common network configurations?

- A. Collection plugins
- B. Collection modules
- C. Collection roles
- D. Collection libraries

**Answer: C**

Explanation:

The NVIDIA NVUE Collection for Ansible includes pre-built roles designed to streamline automation tasks across various switch models and configurations. These roles encapsulate common network configurations, allowing for efficient and consistent deployment.

By utilizing these roles, network administrators can:

- \* Apply standardized configurations across different devices.
- \* Reduce the complexity of playbooks by reusing modular components.
- \* Ensure consistency and compliance with organizational policies.

This approach aligns with Ansible best practices, promoting maintainability and scalability in network automation.

Reference: NVIDIA NVUE Collection Documentation - Ansible Roles

#### NEW QUESTION # 42

How is congestion evaluated in an NVIDIA Spectrum-X system?

- A. By analyzing the egress queue loads ensuring all ports are well-balanced.
- B. By monitoring the CPU and power usage of network devices.
- C. By assessing the physical distance between network devices.
- D. By measuring the number of connected devices in the network.

**Answer: A**

Explanation:

In NVIDIA Spectrum-X, congestion is evaluated based on egress queue loads. Spectrum-4 switches assess the load on each egress queue and select the port with the minimal load for packet transmission. This approach ensures that all ports are well-balanced, optimizing network performance and minimizing congestion.

#### NEW QUESTION # 43

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 Cloud
- C. NVIDIA LaunchPad
- D. NVIDIA DGX SuperPOD

**Answer: D**

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 # 44

When creating a simulation in NVIDIA AIR, what syntax would you use to define a link between port 1 on spine-01 and port 41 on gpu-leaf-01?

- A. "spine-01":\*swp01" - \*gpu-leaf-01":swp41"
- B. "spine-01":eth1" - "gpu-leaf-01":eth41"
- C. "spine-01 'eth1" to "gpu-leaf-01":eth41"
- D. "spine-01":swp1" to "gpu-leaf-01":swp41"

**Answer: A**

Explanation:

NVIDIA AIR (AI-Ready Infrastructure) is a cloud-based simulation platform designed to model and validate data center network deployments, including Spectrum-X Ethernet networks, using realistic topologies and configurations. When creating a custom topology in NVIDIA AIR, users can define network links between devices (e.g., spine and leaf switches) using a DOT file format, which is based on the Graphviz graph visualization software. The question asks for the correct syntax to define a link between port 1 on a spine switch (spine-01) and port 41 on a leaf switch (gpu-leaf-01) in a NVIDIA AIR simulation.

According to NVIDIA's official NVIDIA AIR documentation, the DOT file format is used to specify network topologies, including nodes (devices) and links (connections between ports). The syntax for defining a link in a DOT file uses a double dash (--) to indicate a connection between two ports, with each port specified in the format "<node>:<port>". For Spectrum-X networks, which typically use Cumulus Linux or SONiC on NVIDIA Spectrum switches, ports are commonly labeled as swpX (switch port X) rather than ethX (Ethernet interface), especially for switch-to-switch connections in a leaf-spine topology. The correct syntax for the link between port 1 on spine-01 and port 41 on gpu-leaf-01 is:

```
"spine-01":swp01" -- "gpu-leaf-01":swp41"
```

This syntax uses swp01 and swp41 to denote switch ports, consistent with Cumulus Linux conventions, and the double dash (--) to indicate the link, as required by the DOT file format.

Exact Extract from NVIDIA Documentation:

"You can create custom topologies in Air using a DOT file, which is the file type used with the open-source graph visualization

software, Graphviz. DOT files define nodes, attributes, and connections for generating a topology for a network. The following is an example of a link definition in a DOT file:

```
"leaf01":"swp31" -- "spine01":"swp1"
```

This specifies a connection between port swp31 on leaf01 and port swp1 on spine01. Port names typically follow the switch port naming convention (e.g., swpX) for Cumulus Linux-based switches."

-NVIDIA Air Custom Topology Guide

This extract confirms that option A is the correct answer, as it uses the proper DOT file syntax with swp01 and swp41 for port names and the double dash (--) for the link, aligning with NVIDIA AIR's topology definition process for Spectrum-X simulations.

Analysis of Other Options:

\* B. "spine-01":"swp1" to "gpu-leaf-01":"swp41": This option uses the correct port naming convention (swp1 and swp41) but incorrectly uses the word to as the connector instead of the double dash (--). The DOT file format requires -- to define links, making this syntax invalid for NVIDIA AIR.

\* C. "spine-01":"eth1" to "gpu-leaf-01":"eth41": This option uses ethX port names, which are typically used for host interfaces (e.g., servers) rather than switch ports in Cumulus Linux or SONiC environments. Switch ports in Spectrum-X topologies are labeled swpX. Additionally, the use of to instead of -- is incorrect for DOT file syntax, making this option invalid.

\* D. "spine-01":"eth1" - "gpu-leaf-01":"eth41": This option uses a single dash (-) instead of the required double dash (--) and incorrectly uses ethX port names instead of swpX. The ethX naming is not standard for switch ports in Spectrum-X, and the single dash is not valid DOT file syntax, making this option incorrect.

Why "spine-01":"swp01" -- "gpu-leaf-01":"swp41" is the Correct answer:

Option A correctly adheres to the DOT file syntax used in NVIDIA AIR for defining network links:

\* Node and Port Naming: The nodes spine-01 and gpu-leaf-01 are specified with their respective ports swp01 and swp41, following the swpX convention for switch ports in Cumulus Linux-based Spectrum- X switches.

\* Link Syntax: The double dash (--) is the standard connector in DOT files to indicate a link between two ports, as required by Graphviz and NVIDIA AIR.

\* Spectrum-X Context: In a Spectrum-X leaf-spine topology, connections between spine and leaf switches (e.g., Spectrum-4 switches) use switch ports labeled swpX, making swp01 and swp41 appropriate for this simulation.

This syntax ensures that the NVIDIA AIR simulation accurately models the physical connection between spine-01 port 1 and gpu-leaf-01 port 41, enabling validation of the Spectrum-X network topology. The DOT file can be uploaded to NVIDIA AIR to generate the topology, as described in the documentation.

## NEW QUESTION # 45

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