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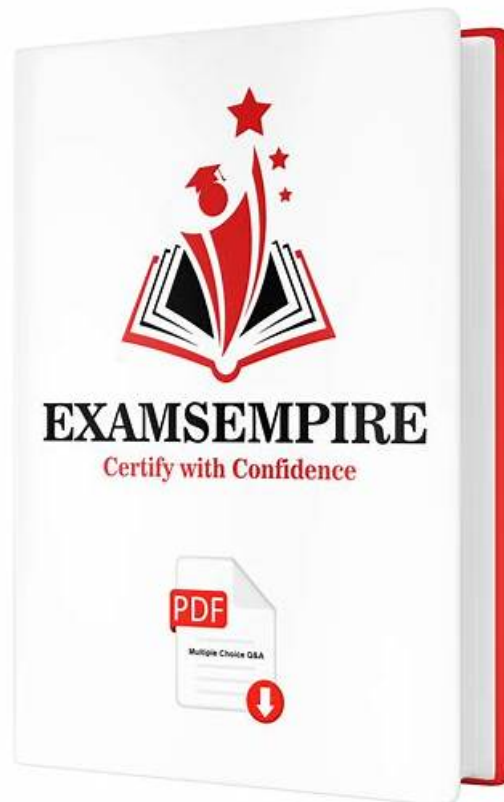


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## NVIDIA NCP-AIN Exam Syllabus Topics:

| Topic | Details |
|---|---|
| Topic 1 | • 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 | • 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. |
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|---|---|
| Topic 3 | • 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. |

# Latest NCP-AIN Examprep & NCP-AIN Authentic Exam Questions

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# NVIDIA-Certified Professional AI Networking Sample Questions (Q10-Q15):

**NEW QUESTION # 10**
You are implementing a multi-tenant environment on your Spectrum-X switches for different departments in your organization. You need to ensure that each department's network traffic is isolated and secure.
Which Spectrum-X security feature would be most effective in creating isolated network environments for each department?

- A. Enable Link Layer Discovery Protocol (LLDP)
- B. Set UP Port Mirroring
- C. Implement Access Control Lists (ACLs)
- D. Configure Virtual Routing and Forwarding (VRF)

**Answer: D**

Explanation:
Virtual Routing and Forwarding (VRF)is the most effective method to achievenetwork segmentation and isolationin a multi-tenant environment.
From theNVIDIA Cumulus Linux Documentation - VRF Section:
"VRF allows multiple instances of routing tables to coexist within the same switch, effectively isolating traffic between tenants or departments."Each department can:
* Operate in its own VRF domain
* Have independent routing tables
* Maintain strict separation of Layer 3 paths
Incorrect Options:
* A (Port Mirroring)- Used for traffic monitoring, not isolation.
* C (ACLs)- Useful for fine-grained filtering, but not scalable tenant isolation.
* D (LLDP)- Used for neighbor discovery, not security or isolation.
Reference: Cumulus Linux - VRF Support on Spectrum Switches

**NEW QUESTION # 11**
You are optimizing an InfiniBand network for AI workloads that require low-latency and high-throughput data transfers. Which feature of InfiniBand networks minimizes CPU overhead during data transfers?

- A. PKey
- B. SHARP
- C. Direct Memory Access (DMA)
- D. TCP/IP Offloading

**Answer: C**

Explanation:

Direct Memory Access (DMA) in InfiniBand networks allows data to be transferred directly between the memory of two devices without involving the CPU. This capability significantly reduces CPU overhead, lowers latency, and increases throughput, making it ideal for AI workloads that demand efficient data transfers.


## NEW QUESTION # 12

What is the purpose of WJH (What Just Happened)?

- A. Provide contextual information regarding dropped packets in order to aid debugging.
- B. Send notifications of failed login attempts to a pre-defined Slack channel.
- C. Collate operating system logs and diagnose system crashes.
- D. Identify potential cyberattacks or unusual traffic patterns across the cluster.

**Answer: A**

Explanation:
NVIDIA's What Just Happened (WJH) is a feature that provides real-time visibility into network problems by analyzing all packets passing through the switch and alerting on performance issues caused by packet drops, congestion, high latency, or misconfigurations.
WJH retains the last packets that were dropped from the switch with complete packet headers and the actual drop reason. This enhances the ability to debug network problems, identify affected flows, and decrease time- to-repair.


## NEW QUESTION # 13

You're designing a multi-GPU system for AI training using NVIDIA GPUs with NVLink connections.
You need to maximize inter-GPU communication bandwidth. Which feature included in NCCL allows for improved communication between GPUs and NICs?

- A. PXN
- B. Adaptive Routing
- C. Graph Search Optimization
- D. SHARP v2

**Answer: A**

Explanation:
The correct answer isPXN (Peer eXchange Network).
From theNVIDIA NCCL Documentation:
"PXN enables communication between GPUs connected via NVLink and NICs by treating the GPUs as a distributed switch. This architecture improves bandwidth utilization by enabling any GPU to communicate with the NIC via the shortest path available, even if it's not directly connected to the NIC." This enhances GPU-to-NIC and NIC-to-GPU transfers, leveraging the NVLink topology.
It significantly boosts performance in multi-GPU setups where not every GPU is directly connected to the NIC.
Other options:
* Adaptive Routingis a fabric-level feature for dynamic path rerouting.
* Graph Search Optimizationis used internally for topology modeling in NCCL.
* SHARP v2is a switch-based collective acceleration method, unrelated to PXN.
Reference: NVIDIA NCCL User Guide - PXN Feature Section


## NEW QUESTION # 14

As the network administrator for a large-scale AI research cluster, you are responsible for ensuring seamless data flow across an InfiniBand east-west fabric that interconnects hundreds of compute nodes.
Which tool would you use to trace and discover the network paths between nodes on this InfiniBand east-west fabric?

- A. ibnetdiscover
- B. NetQ
- C. ibpathverify
- D. tracert

**Answer: A**

Explanation:

The ibnetdiscover utility is used to perform InfiniBand subnet discovery and outputs a human-readable topology file. GUIDs, node types, and port numbers are displayed, as well as port LIDs and node descriptions.

All nodes and links are displayed, providing a full topology. This utility can also be used to list the current connected nodes. The output is printed to the standard output unless a topology file is specified.

InfiniBand is a high-performance, low-latency interconnect technology used in AI and HPC data centers, particularly for east-west traffic between compute nodes in large-scale fabrics. Ensuring seamless data flow requires tools to troubleshoot and monitor the network, including the ability to trace and discover network paths between nodes. The question asks for the specific tool used to trace and discover paths in an InfiniBand fabric, which is a key task in InfiniBand troubleshooting.

According to NVIDIA's official InfiniBand documentation, the ibnetdiscover tool is designed to discover and map the topology of an InfiniBand fabric, including the paths between nodes. It scans the fabric, queries the subnet manager, and generates a topology map that details the connections between switches, Host Channel Adapters (HCAs), and other devices. This tool is essential for verifying connectivity, identifying routing paths, and troubleshooting issues like misconfigured routes or link failures in large-scale InfiniBand fabrics.

Exact Extract from NVIDIA Documentation:

"The ibnetdiscover tool is used to discover the InfiniBand fabric topology and generate a map of the network.

It queries the subnet manager to retrieve information about all nodes, switches, and links in the fabric, providing a detailed view of the paths between nodes. This tool is critical for troubleshooting connectivity issues and ensuring proper routing in InfiniBand networks."

-NVIDIA InfiniBand Networking Guide

This extract confirms that ibnetdiscover is the correct tool for discovering network paths in an InfiniBand east- west fabric. It provides a comprehensive view of the fabric's topology, enabling administrators to trace paths between compute nodes and ensure seamless data flow.

Reference:InfiniBand Fabric Utilities - NVIDIA Docs


**NEW QUESTION # 15**

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