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NVIDIA NCP-AIN Exam Syllabus Topics:

Topic	Details
Topic 1	<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 2	<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.
Topic 3	<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.

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Reliable NVIDIA NCP-AIN Exam Tips, NCP-AIN Reliable Exam Sample

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NVIDIA-Certified Professional AI Networking Sample Questions (Q12-Q17):

NEW QUESTION # 12

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

Answer: B

Explanation:

The correct answer is PXN (Peer eXchange Network).

From the NVIDIA 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 Routing is a fabric-level feature for dynamic path rerouting.
- * Graph Search Optimization is used internally for topology modeling in NCCL.
- * SHARP v2 is a switch-based collective acceleration method, unrelated to PXN.

Reference: NVIDIA NCCL User Guide - PXN Feature Section

NEW QUESTION # 13

You are optimizing an AI workload that involves multiple GPUs across different nodes in a data center. The application requires both high-bandwidth GPU-to-GPU communication within nodes and efficient communication between nodes.

Which combination of NVIDIA technologies would best support this multi-node, multi-GPU AI workload?

- A. NVLink for both intra-node and inter-node GPU communication.
- B. NVLink for intra-node GPU communication and InfiniBand for inter-node communication.
- C. InfiniBand for both intra-node and inter-node GPU communication.
- D. PCIe for intra-node GPU communication and RoCE for inter-node communication.

Answer: B

Explanation:

For optimal performance in multi-node, multi-GPU AI workloads:

- * NVLink provides high-speed, low-latency communication between GPUs within the same node.
- * InfiniBand offers efficient, scalable communication between nodes in a data center. Combining these technologies ensures both intra-node and inter-node communication needs are effectively met.

Reference: NVIDIA NVLink & NVSwitch: Fastest HPC Data Center Platform

NEW QUESTION # 14

You are configuring the Unified Fabric Manager (UFM) for an InfiniBand fabric in a multi-tenant environment. You need to implement a solution that can detect potential security threats.

Which UFM feature uses analytics to detect security threats and predict network failures in InfiniBand data centers?

- A. Telemetry platform
- **B. Cyber-AI platform**
- C. Host Agent
- D. Enterprise platform

Answer: B

Explanation:

The UFM Cyber-AI platform is an advanced feature of NVIDIA's Unified Fabric Manager designed to enhance security and reliability in InfiniBand data centers. It leverages AI-powered analytics and machine learning techniques to detect security threats, operational anomalies, and predict potential network failures.

By analyzing real-time and historical telemetry data, UFM Cyber-AI can identify abnormal system behaviors, performance degradations, and usage profile changes. This proactive approach enables administrators to address issues before they escalate, ensuring the integrity and uptime of the data center.

Reference Extracts from NVIDIA Documentation:

- * "The NVIDIA Unified Fabric Manager (UFM) Cyber-AI platform offers enhanced and real-time network telemetry, combined with AI-powered intelligence and advanced analytics. It enables IT managers to discover operational anomalies and even predict network failures."
- * "UFM Cyber-AI uses machine learning (ML) techniques and AI models for anomaly detection and prediction to learn the lifecycle patterns of data center network components."
- * "The NVIDIA UFM platforms revolutionize data center networking management by combining enhanced, real-time network telemetry with AI-powered cyber intelligence and analytics to support scale-out InfiniBand data centers. ... The UFM Cyber-AI platform takes fabric management to the next level by adding an analytics layer powered by artificial intelligence. It enables data center operators to proactively monitor and manage the InfiniBand fabric, predicting and preventing potential failures, optimizing performance, and enhancing security. By analyzing telemetry data and historical patterns, UFM Cyber-AI can detect anomalies that may indicate security threats or operational issues, providing actionable insights to prevent downtime."

NEW QUESTION # 15

When designing a multi-tenancy East/West (E/W) fabric using Unified Fabric Manager (UFM), which method should be used?

- A. ROMA
- **B. Partition / PKey**
- C. VXLAN
- D. VLAN

Answer: B

Explanation:

In InfiniBand networks, Partitioning using Partition Keys (PKeys) is the standard method for implementing multi-tenancy and traffic isolation. PKeys allow administrators to define logical partitions within the fabric, ensuring that traffic is confined to designated groups of nodes. This mechanism is essential for creating secure and isolated environments in multi-tenant architectures.

The Unified Fabric Manager (UFM) leverages PKeys to manage these partitions effectively, enabling administrators to assign and control access rights across different tenants. This approach ensures that each tenant's traffic remains isolated, maintaining both security and performance integrity within the shared fabric.

Reference:NVIDIA UFM Enterprise User Manual v6.15.6-4

NEW QUESTION # 16

What are the necessary steps to upgrade the MLNX-OS on InfiniBand Switches?

- **A. Connect to the switches using SSH, fetch the MLNX-OS software image, and use the 'install' command to perform the upgrade.**
- B. Power off the switches, insert the installation media, and power on the switches to start the upgrade process.
- C. Restart the switches, connect to the switches using Telnet, and use the 'update' command to perform the upgrade.
- D. Remove the switches from the switch fabric, fetch the MLNX-OS software image, and use the 'upgrade' command to perform the upgrade.

Answer: A

Explanation:

To upgrade the MLNX-OS on InfiniBand switches, the recommended procedure is as follows:

* Connect to the switch via SSH: Establish a secure shell connection to the switch using its management IP address.

* Fetch the MLNX-OS software image: Obtain the appropriate MLNX-OS software image from the official source or repository.

* Use the 'install' command to perform the upgrade: Execute the 'install' command on the switch to initiate the upgrade process with the fetched software image.

This method ensures a smooth and efficient upgrade without the need for physical intervention or service disruption.

Reference Extracts from NVIDIA Documentation:

* "Click on Systems # MLNX-OS Upgrade. Select the desired upgrade method (e.g. 'Install from local file'). Select your image and click 'Install Image'."

NEW QUESTION # 17

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