Specialist – Implementation Engineer, Campus Networking Version 1.0
Certification Description

Certification Overview
This certification validates the ability to perform intermediate skill level tasks in installing, configuring, maintaining and troubleshooting Dell EMC Campus Networking products.

Certification Requirements
To complete the requirements for this certification you must:

1. Achieve one of the following credentials
    *   Associate - Networking Version 1.0
    *   Dell Certified Associate – Networking *(Valid if already earned, but not achievable anymore)*
    *
2. Pass the following Implementation Exam
    *   DES-5121 Specialist - Implementation Engineer, Campus Networking Exam

Note: These details reflect certification requirements as of April 26, 2019.

Dell Technologies Partners: Achieving a certification validates capability; however, it does not imply authorization to deliver services. Services Delivery Competencies provide partners with the ability to deliver services under their own brand or co-deliver with Dell Technologies. Tiered partners are eligible to obtain services delivery competencies upon completing the specific requirements outlined in the enablement matrix. Only partners that have met these requirements should be delivering their own services in lieu of Dell Technologies Services.

Other Certification Recommendations
Once you have achieved this Certification you may be interested in:
*   Specialist – Implementation Engineer, Data Center Networking

The Proven Professional Program periodically updates certification requirements. *Please check the Proven Professional CertTracker website regularly for the latest information and for other options to meet the Associate level requirement.

Proven Professional Website

Education Services Community

Dell Inc.
Hopkinton
Massachusetts
01748-9103
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In North America
1-866-464-7381

DELL Technologies

DES-5121 Specialist – Implementation Engineer, Campus Networking Exam
Exam Description

Overview
This exam is a qualifying exam for the **Specialist – Implementation Engineer, Campus Networking** track.

This exam focuses on concepts related to the Campus environment and Dell EMC Networking's N-Series products. Focus is on DNOS6-based protocols and features.

Dell Technologies provides free practice tests to assess your knowledge in preparation for the exam. Practice tests allow you to become familiar with the topics and question types you will find on the proctored exam. Your results on a practice test offer one indication of how prepared you are for the proctored exam and can highlight topics on which you need to study and train further. A passing score on the practice test does not guarantee a passing score on the certification exam.

Products
Products likely to be referred to on this exam include but are not limited to:

- Dell EMC Networking N-Series Switches

Duration
90 Minutes
 (60~ Questions)

Pass Score: 63

Practice Test
Exam [DES-5121](#)

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Exam Topics
Topics likely to be covered on this exam include:

Networking Overview (8%)
- Explain the typical end-to-end data flow of a Campus network
- Identify and describe the common Campus networking topologies
- Identify and describe the steps required to configure multicasting into an existing multicast environment

Switch Configuration (11%)
- Describe the differences between the initial setup requirements for a standalone switch versus a stack of switches
- Explain how to configure a Dell EMC N-Series switch including boot sequence, applying a management IP address, switch name, and credentials
- Identify and the describe the steps to upgrade switch firmware

Routing: VLANs and Policy-Based Routing (PBR) (15%)
- Identify and describe VLAN routing and private VLANs including their use in a Campus network environment
- Explain how to determine a port VLAN membership and configure port trunking
- Describe policy-based routing (PBR) basic operations
- Explain how to configure and validate policy-based routing (PBR) configurations

Protocols: Spanning Tree (STP) and Virtual Router Redundancy (VRRP) (15%)
- Describe how RSTP, MSTP, and RSTP-PV are configured and validated

- Describe how to configure PortFast, FastLink, and STP protection
- Identify and describe VRRP components and their basic operations
- Describe VRRP priorities including contrast and compare preemption versus no preemption

Link Aggregation Group (LAG) and Multi-Chassis Link Aggregation Group (MLAG) (11%)
- Describe how to configure a static and a dynamic LAG
- Explain how to troubleshoot LAG configuration mismatches
- Describe how to configure and validate MLAG configurations and how to upgrade switch firmware in an MLAG configuration

Security: Access Control Lists (ACLs) (8%)
- Identify and describe the various commands used to either deny or permit IP connectivity
- Describe the configuration steps to permit host access control; identify and troubleshoot server access issues

Security: Port Security and Authentication, Authorization, Accounting (AAA) Security (14%)
- Compare and contrast the various port security methods and identify ports with port security enabled
- Describe how to configure sticky MAC addresses and configure a switch to point to a RADIUS server
- Describe the purpose of AAA security; configure local authentication and AAA security

Power over Ethernet (PoE) (6%)
- Describe the purpose for PoE, its benefits, and common PoE devices
- Describe how to configure PoE on a switch port and measure power output

VoIP and Quality of Service (QoS) (15%)
- Identify and describe the process in which an IP phone obtains its configuration and the cause for an IP phone not powering on
- Identify and describe the configuration requirements to support VoIP devices
- Describe QoS basic operations, operational characteristics, and how QoS identifies and marks traffic
- Describe how to configure QoS on Dell EMC N-Series switches

The percentages after each topic above reflects the approximate distribution of the total question set across the exam.

Recommended Training
The following curriculum is recommended for candidates preparing to take this exam.

Please complete the following course

Course Title	Course Number	Mode	Available
Dell EMC PowerSwitch Campus Implementation and Administration	ES102NET00233	Classroom / Virtual Classroom	1/25/2019

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Note: These exam description details reflect contents as of **April 26, 2019**.

The Proven Professional Program periodically updates exams to reflect technical currency and relevance. Please check the Proven Professional website regularly for the latest information.

Dell Technologies believes the information in this document is accurate as of its publication date. The information is subject to change without notice.