

Contest Description

COMPETITION DATE: Saturday, April 24, 2021	CONTEST AREA NAME: IT – Network Systems Administration
CONTEST AREA NUMBER: 39	LEVEL: Post-Secondary
DURATION OF CONTEST: 6 hours	LOCATION: Virtual

CONTEST INTRODUCTION

Purpose of the Challenge.

To evaluate each competitor's skills and to recognize excellence and professionalism in the field of IT network systems administration.

Skills and Knowledge to be tested.

The competition evaluates a competitor's knowledge of computer and network hardware, and systems administration of Windows and Linux operating systems.

CONTEST DESCRIPTION

List of documents produced and timeline for when competitors have access to the documents.

- No other competition document will be released prior to the competition.

Essential Skills

- Create, interpret, and modify textual and graphical documentation.
- Calculate and apply to a network, an IPv4 and/or IPv6 addressing scheme using subnetting and/or Variable Length Subnet Mask (VLSM).
- Troubleshoot hardware and/or software issues with network and/or desktop configuration.
- Implement, verify, and troubleshoot networking device security.

Hardware setup and initial configuration

- Identify, install, and test hardware components.
- Troubleshoot hardware failures.
- Install and configure virtual machines.
- Use disk, system, and file management tools.
- Prepare and manage disk volumes including redundancy.

Networking

- Implement, verify, and troubleshoot Local Area Network (LAN), Wide Area Network (WAN), Network Address Translation (NAT) and wireless networking services.
- Implement, verify, and troubleshoot IPv4 and IPv6 routing protocols including Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP) on Layer 3 devices.
- Implement, verify, and troubleshoot route distribution and route summarization.
- Implement, verify, and troubleshoot spanning-tree operation.
- Implement, verify, and troubleshoot ether-channel operation.
- Implement, verify, and troubleshoot Virtual Local Area Networks (VLANs) and inter-VLAN communications.
- Implement, verify, and troubleshoot access control lists (ACLs) for IPv4 and IPv6.
- Implement, verify, and troubleshoot port security.
- Implement, verify, and troubleshoot Virtual Private Network (VPN) tunnel.
- Implement network monitoring and make decisions based on gathered data.
- Implement, verify, and troubleshoot IOS images and licensing.
- Implement, Verify, and troubleshoot First Hop Redundancy Protocols (FHRP)

Windows Server Operations

- Configure Domain Name System (DNS), Dynamic Host Control Protocol (DHCP), and Active Directory (AD)
- Create and perform maintenance of Active Directory objects
- Configure, verify, and troubleshoot infrastructure services and roles
- Delegate administrative roles
- Implement and verify Group Policies
- Manage server security, including windows firewall
- Perform data provisioning (i.e. shared resources, offline data)
- Perform and verify backups and restores
- Enable and configure remote management
- Manage Internet Information Service (IIS) services
- Automate tasks using batch files and PowerShell scripts
- Perform automated server or workstation deployment
- Manage Active Directory infrastructure
- Deploy Active Directory Certificate Services
- Manage Server upgrades and/or migrations including Active Directory services

Linux Server Operations

- Application package management, including custom package sources
- Configure and manage network and local storage devices and their respective file systems including RAID
- Set and modify file and directory permissions, special permissions, and ownership
- Perform and verify backups and restores
- Monitor and troubleshoot network activity
- Perform remote management
- Create, modify, and use shell scripts with BASH
- Create, modify, and delete user and group accounts
- Perform job scheduling
- Manage and troubleshoot HTTP, and FTP services
- Manage runlevels and system initialization from configuration files
- Configure and verify system security
- Configure server-based network services (e.g. Domain Name Service [DNS], Dynamic Host Control Protocol [DHCP], Server Message Block [SMB])
- Set up environment variables; set process and special permissions
- Implement security auditing for files and authentication
- Set up user-level security, such as LDAP and NIS
- Configure user access security with Pluggable Authentication Modules [PAM]

Note: Competitors will not be allowed to compete if the above items are not brought and used.

EQUIPMENT, MATERIAL, CLOTHING

Equipment and Material supplied by Skills Canada-Newfoundland and Labrador

- Suitable computer hardware
- Cisco Packet Tracer Software
- Virtualization software
- Any edition of Windows Server 2016 including both Full and Core editions
- Windows Server 2012 R2 for migration activities
- Windows 8/10
- Current version of Ubuntu (16.04 or later)

Software tools including

- Nmap
- Nessus
- Wireshark
- John the Ripper

Note: Competitors should not expect access to the internet during the competition.

Equipment and Material_Compervisor must supply:

- Pen and paper

Required clothing (Provided by compervisor)

- Competitors must be dressed as appropriate for an office environment.

EVALUATION/JUDGING CRITERIA

Point Breakdown

POINT BREAKDOWN	/1000
Windows Administration	250
Troubleshooting	250
Linux Administration	250
Network Infrastructure	250

ADDITIONAL INFORMATION

Tie (No ties are allowed)

In the event of a tie, the competitor with the highest score in the Troubleshooting criteria, if this score is tied placement will be determined on highest score in the networking criteria, if still tied placement will be determined on highest score in the Linux criteria.

Competition Rules

Please refer to the competition rules for all general SCPC information.

PROVINCIAL TECHNICAL COMMITTEE MEMBERS

NAME	EMAIL ADDRESS
Jim Pelley	James.pelley@cna.nl.ca
Evan Rideout	Evan.rideout@gmail.com