

2023 Provincial Scope Document

Skill 39 – IT Network Systems Administration

Post-Secondary Competition

Contest Length – 6 hours

Registration Time – 8:00am

Purpose of the Challenge

This challenge will provide each competitor the opportunity to demonstrate excellence and professionalism in the field of IT Network Systems Administration.

Project Scenario

For the purposes of this competition, each competitor is considered to be a Junior IT Administrator. Each competitor will be required to complete and document selected tasks from the project tasks listed below. Not all listed tasks will be tested.

Project Tasks

Documentation Creation and Interpretation

- Create, interpret, and modify textual and graphical documentation
- Use screen capture technology such as Windows Snipping Tool

Hardware

- Identify, install, connect, and test computer and network hardware components
- Install, configure, and update virtual machines and virtualization software
- Install, configure, and update operating systems

Networking (IPv4 and IPv6)

- Configure and troubleshoot LAN and WAN protocols and architectures
- Configure and troubleshoot Layer 2 and Layer 3 segmentation
- Configure and troubleshoot wireless protocols and architectures
- Configure and troubleshoot routing protocols and architectures
- Configure and troubleshoot route redistribution and summarization

- Configure and troubleshoot VPN protocols and architectures
- Configure and troubleshoot FHRP protocols and architectures
- Configure and troubleshoot STP protocols and architectures
- Configure and troubleshoot NAT
- Configure and troubleshoot ACLs
- Configure and troubleshoot LACP and PAgP
- Configure and troubleshoot port security
- Configure and troubleshoot network monitoring protocols and operations
- Configure and troubleshoot Layer 2 – Layer 7 security protocols
- Calculate, configure, and verify an IPv4 or IPv6 VLSM addressing scheme

Windows Server Environment

- Configure and troubleshoot Active Directory objects and infrastructure
- Configure and troubleshoot DHCP and DNS infrastructure
- Configure and troubleshoot GPO objects
- Configure and troubleshoot services and roles
- Configure and troubleshoot remote server and service management
- Configure and troubleshoot HTTP/S services (e.g. IIS)
- Configure and troubleshoot Hyper-V or other virtualization tools
- Configure and troubleshoot Active Directory Certificate Services
- Configure and troubleshoot automated server and workstation deployment
- Configure and troubleshoot task automation via batch files and PowerShell scripts
- Configure and troubleshoot server-based security technologies and practices
- Configure and troubleshoot backup, restore, and migration procedures
- Configure and troubleshoot administrative role delegation
- Configure and troubleshoot network shares and permissions
- Configure and troubleshoot local storage devices and file systems, including RAID
- Configure and troubleshoot file and directory permissions and ownership
- Monitor and troubleshoot network activity and services
- Create, modify, and delete users, groups, and directory objects
- Configure and troubleshoot disk, system, and file management tools

Linux Server Environment

- Configure and troubleshoot LDAP objects and infrastructure
- Configure and troubleshoot DHCP and DNS infrastructure
- Configure and troubleshoot services and roles
- Configure and troubleshoot FTP and SSH services
- Configure and troubleshoot HTTP/S services (e.g. Apache)

- Configure and troubleshoot KVM or other virtualization tools
- Configure and troubleshoot task automation via shell scripts and commands
- Configure and troubleshoot job scheduling
- Configure and troubleshoot users and environment variables
- Configure and troubleshoot run levels and system initialization
- Configure and troubleshoot server-based security technologies and practices
- Configure and troubleshoot backup, restore, and migration procedures
- Configure and troubleshoot administrative role delegation
- Configure and troubleshoot network shares and permissions
- Configure and troubleshoot local storage devices and file systems, including RAID
- Configure and troubleshoot file and directory permissions and ownership
- Monitor and troubleshoot network activity and services
- Create, modify, and delete users, groups, and directory objects
- Configure and troubleshoot application package management and custom repos
- Configure and troubleshoot disk, system, and file management tools

Troubleshooting and Incident Resolution

- Identify, document, and resolve incidents based on user-provided descriptions
- Identify, document, and resolve incidents relating to computer hardware and software
- Identify, document, and resolve incidents relating to network hardware and software
- Identify, document, and resolve incidents relating to server and application software
- Reference all available information including software logs and documentation

Equipment, Tools, and Materials

To be Supplied by Each Competitor

- Pen and pencil

To be Supplied by the Committee as Required

- Suitable physical and/or virtual computer hardware
- Suitable virtualization software
- Suitable software or worksheets for documentation
- Cisco Packet Tracer
- Current version of Windows server environment (e.g. 2016 R2 or later)
- Current version of Linux server environment (e.g. Ubuntu 20.04 or later)
- Current version of Windows desktop environment (e.g. Windows 10 or later)
- Current version of Linux desktop environment (e.g. Ubuntu 20.04 or later)

Clothing Requirements

Competitors are to be dressed in a clean and safe manner appropriate for a business office environment.

Safety Requirements

Safety awareness and requirements will always exceed the minimum industry standards. A competitor will not be allowed to compete without the safety equipment noted within this scope document.

Judging Criteria

- Ability to configure, test, and upgrade workstations, servers, and network devices
- Ability to configure, test, and upgrade application software
- Ability to follow vendor, industry, and security best practices
- Ability to comprehend and follow provided written and oral instructions
- Ability to complete and provide appropriate and organized documentation
- Proper technique and safe use of trade tools
- Neatness of work area and space management
- Professionalism, including cooperation and demeanor during the competition

In the case of a tie at the end of the competition, the competitor with the higher score in the Linux section will be declared the winner. If the tie continues, the competitor with the higher score in the Networking section will be declared the winner. If the tie continues, professionalism will be the deciding factor.

Technical Committee

Andrew Mueller, Refrigerative Supply Limited
Nathan Wiens, Cradlepoint
Troy Berg, Okanagan College
Eddie Wong, Burnaby South Secondary

Chair
Member
Member
Member

Skills Canada BC reserves the right to make changes to this scope document.