

Provincial Scope Document

IT – Network Systems Administration (Secondary) 2016

Contest Length: 6 hours

Registration: 8:00

Contest Start: 8:30

Purpose of the Challenge:

To provide each competitor the opportunity to demonstrate their knowledge and skills in network systems administration and support.

Project Scenario:

For the purpose of this competition, the competitor is considered to be an entry-level IT Technician, also known as a Computer Technician. The competitor will be required to complete select tasks relating to each of the content areas listed. Not all listed tasks will be tested.

Tasks:

Overview of task areas / types:

1. Assemble and/or troubleshoot a networked PC and provide service & support.
2. Construct network cabling.
3. Connect PC computers in peer-to-peer and client/server environments.
4. Carry out administrative functions in a client/server environment including security.
5. Configure SOHO router, wireless router and switch devices.

Support of desktop workstations

- Identify, install, and test hardware components
- Troubleshoot hardware/software failures
- Install and configure virtual machines
- Use disk, system, and file management tools
- Produce technical and end-user documentation
- Demonstrate understanding of software licensing
- Install, setup, and configure utility software to corporate standards
- Install peripheral devices and verify correct operation

- Configure and troubleshoot common home office and small business software operations

Desktop maintenance, including testing and troubleshooting

- Use technical documentation including specifications and procedures
- Use available documentation and logs to identify and resolve problems
- Use utility software to benchmark software or hardware performance
- Use utility software to diagnose software or hardware problems
- Choose appropriate diagnostic programs to troubleshoot problems
- Troubleshoot software installation problems

Desktop Security

- Create security-related documentation
- Perform patch and update management
- Install, configure and verify basic security-related software and cryptographic processes
- Create and update security policies and procedures to ensure security and reliability of data stores

Networking

- Interpret network diagrams
- Create network documentation in written and diagram form
- Use basic network diagnostic software
- Calculate and apply, an addressing scheme using Variable Length Subnet Mask (VLSM) using Internet Protocol addressing (IPv4)
- Implement static and dynamic (DHCP) addressing services for hosts in a Local Area Network (LAN) environment
- Implement, verify, and troubleshoot hardware and software network configuration
- Implement, verify, and troubleshoot securing of network devices
- Implement, verify, and troubleshoot network address translation (NAT)
- Implement, verify, and troubleshoot a Wide Area Network (WAN) link
- Implement an IP addressing scheme and IP Services to meet network requirements in a Small Office / Home Office (SOHO) network environment
- Install wireless hardware and software on client machines
- Implement, verify, and troubleshoot a SOHO wireless deployment
- Configure, verify, and troubleshoot the securing of wireless communication

**A short answer, written component will be used to evaluate the competitor's ability to demonstrate user support.*

Skills & Knowledge required

- Ability to install Windows and/or Linux operating systems.
- Ability to integrate PC's and users in a network environment.
- Working knowledge of SOHO networking devices including hubs, switches, routers and wireless routers.
- Basic knowledge of Linux.

- Ability to install and maintain software applications.
- Ability to upgrade and maintain PC hardware.
- Ability to assemble CAT5/CAT6 patch cables to specification.
- Working knowledge of TCP/IP protocols and principles.
- Ability to update maintenance activity logs, including documentation of changes (system and equipment).
- Ability to use a standard multimeter to perform basic cable tests
- Ability to read and interpret system documentation.
- Ability to perform basic network administration.
- Ability to use capture technology such as Windows Steps Recorder and Snipping tools to document a workflow.

Equipment / Tools / Materials

Supplied by Competitor:

- Pen, pencil. Hand tools including multi-bit screwdriver.
- Recommended: RJ-45 cable crimpers and assembly tool(s).

Supplied by the Committee as required:

- Windows 8.1 and/or Windows 10.
- VMWare Workstation or Microsoft Hyper-V virtualization software
- Linux CentOS version 7.x
- Software appropriate to support documentation (office suite)
- Suitable computer hardware (1 or 2 PC workstations)
- SOHO Integrated Router device
- Suitable work surface
- Power bars / surge protector
- Raw materials for task completion as required. Expansion hardware including drivers (for any special hardware on PCs)

Clothing Requirements:

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

Safety Requirements:

Safety awareness/requirements will exceed the minimum industry standards at all times. A contestant will not be allowed to compete without the safety equipment noted on this scope document.

Judging Criteria:

- Ability to upgrade and configure PC workstations, servers and network devices.
- Ability to connect, configure, and test networking devices.
- Ability to install operating systems and application software.
- Ability to complete neat, well organized documentation.

- Proper technique and the safe use of trade tools.
- Neatness of work area and space management.
- In the case of a tie at the end of the competition, the competitor with the higher score in the written user support question(s) will be declared the winner. If the tie continues, then professionalism will be the deciding factor.

Technical Committee:

Nolan Fretz, Okanagan College	co-chair
Bob McAuliffe, University of the Fraser Valley	co-chair
John Murtha, Sardis Secondary School	member
Nathan Wiens, Cisco Systems	member

Skills Canada BC reserves the right to make changes to the scope document. Please check the website for updates.