CONTEST DESCRIPTION

Competition Year	2018
Competition Location	MITT – Manitoba Institute of Trades and Technology 130 Henlow Bay, Room 209 .2
Trade Number	39
Trade Name	IT- Network Systems Administration
Level	Post Secondary

1. **Introduction**

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

    1.2. **Time**
    8:00 till 11:00 a.m. and 11:30 till 2:30 p.m.

    1.3. **Duration of Contest**
    6 hours

Skills and Knowledge to be tested

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

2. **Contest Description**

    2.1. **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

2.2. Tasks that may be performed during the contest

Hardware setup and initial configuration
- Identify, install and test hardware components
- Troubleshoot hardware failures
- Perform structured cabling tasks
- Install and configure virtual machines
- Prepare hard drives for operating system setup
- Use disk imaging utilities
- Use disk, system, and file management tools
- Produce technical and end-user documentation

2.3. Networking
- Interpret network diagrams
- Create network documentation in written and diagrammatic forms
- Operate basic network diagnostic software
- Calculate for and apply to a network, an addressing scheme using Variable Length Subnet Mask (VLSM) using IPv4 and IPv6 addressing
- Configure and troubleshoot static and dynamic addressing services for hosts in a Local Area Network (LAN) environment
- Configure and troubleshoot hardware and software network configuration
- Configure and troubleshoot securing of network devices
- Configure and troubleshoot network address translation
- Configure and troubleshoot Wide Area Network (WAN) links and protocols
- Configure and troubleshoot wireless deployment
- Configure and troubleshoot spanning-tree operation on switches
- Configure and troubleshoot a switch with Virtual Local Area Network's (VLANs) and inter-switch communication
- Configure and troubleshoot redundant links using various EtherChannel protocols
- Configure and troubleshoot First Hop Redundancy Protocols (FHRPs)
- Configure and troubleshoot traffic flow management using access control lists (ACLs)
- Configure and troubleshoot basic router operation

- Configure and troubleshoot various routing protocols such as RIPv2, EIGRP, OSPF, and BGP
- Work may be performed on physical or simulated Cisco hardware

3. **Windows Server Operations**
   - Configure Domain Name System (DNS) and DHCP for Active Directory
   - Create and perform maintenance of Active Directory objects
   - Configure, verify, and troubleshoot infrastructure services and roles
   - Implement delegated administration
   - Implement, verify and troubleshoot Group Policies
   - Configure, verify and troubleshoot server security
   - Perform data provisioning (i.e. shared resources, offline data)
   - Perform and verify backups and restores
   - Enable and configure remote management
   - Configure, verify and troubleshoot IIS
   - Automate tasks using batch files and PowerShell scripts
   - Configure, verify, troubleshoot and perform automated server or workstation deployment
   - Configure, verify and troubleshoot Active Directory infrastructure
   - Configure, verify and troubleshoot Active Directory Certificate Services
   - Configure, verify and troubleshoot Network Policy and Access Services (NAP)
   - Manage Server upgrades and/or migrations including Active Directory services

4. **Linux Server Operations**
   - Installation of applications
   - Configure and manage network and local storage devices and their respective file systems
   - Set and modify file and directory permissions and ownership
   - Perform and verify backups and restores
   - Monitor and troubleshoot network activity
   - Perform and configure remote management
   - Create, modify, and use shell scripts with BASH

- Create, modify, and delete user and group accounts
- Perform job scheduling
- Configure, verify and troubleshoot Apache web server
- Manage runlevels and system initialization from configuration files
- Configure, verify and troubleshoot 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

5. Equipment, Material, Clothing
5.1. Equipment provided by Skills Manitoba
- Suitable computer hardware and network devices

5.2. Material provided by Skills Manitoba
- Cabling consumables
- Cisco Packet Tracer Software
- Suitable computer hardware
- Cisco harware
- VMWare virtualization software
- Windows Server 2012 R2 (or later)
- Windows 7, 8.1, 10
- Ubuntu Server/Client (Version 16.04 or later)

5.3. Equipment and material provided by the competitor
- Screwdrivers
- Anti-static wrist strap

5.4. Required clothing (Provided by competitor)

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

6. Safety Requirements

6.1. No personal protective equipment (PPE) is required

7. Assessment
7.1. Point Breakdown

Point Breakdown	/100
Windows Administration	35
Linux Administration	30
Network Infrastructure	35

8. Additional Information

8.1. Tie (No ties are allowed)
In the event of a tie, placement will be determined based on the Network Infrastructure mark. If there still is a tie it will be determined by the Windows Administration mark.

8.2. Competition rules
Please refer to the competition rules for all general CSC information.

8.3. National Competition Eligibility
A mark of **70 % or higher** must be scored by the gold medalist in each contest in order for them to attend the National Skills Competition

8.4 Essential skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. Good Essential Skills means you will understand and remember concepts introduced in technical training. The level of Essential Skills required for most trades is as high as or higher than it is for many office jobs.

The following 9 skills have been identified and validated as key essential skills for the workplace:

Numeracy, Oral Communication, Working with Others, Continuous Learning, Reading Text, Writing, Thinking, Document Use, Digital.

Top Essential Skills for IT Network Systems Administration: Thinking: Problem Solving, Job task planning and organizing, Document Use, Digital

9. Manitoba Technical Committee Members

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