



SKILLS MANITOBA COMPETITION CONTEST DESCRIPTION

Competition Year	2024
Competition Location	MITT – Manitoba Institute of Trades and Technology 130 Henlow Bay, Room 209.6
Trade Number	39
Trade Name	IT- Network Systems Administration
Level	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

1.4. Skills and Knowledge to be tested

The competition evaluates a competitor's knowledge of computer and network hardware, assessed across four Domains: Computer Hardware / System Setup, Configuring and Securing a System, Troubleshooting, and Networking.

1.5. Maximum 5 competitors per school.



2. Contest Description

Time	Will Competitors have Internet Access?	Assessed Task	Domains
8:00 to 11:00	Yes	<ul style="list-style-type: none">• Building and Configuring a PC*	<ul style="list-style-type: none">• Computer Hardware / System Setup
		<ul style="list-style-type: none">• A provided VM that requires Basic and Security configurations	<ul style="list-style-type: none">• Troubleshooting• Configuring and Securing a System
		<ul style="list-style-type: none">• Building a Network Cable	<ul style="list-style-type: none">• Computer Hardware / Networking
11:30 to 2:30	No	<ul style="list-style-type: none">• A 40 to 60 question quiz	<ul style="list-style-type: none">• Computer Hardware / System Setup / Basic Cybersecurity / Networking
		<ul style="list-style-type: none">• VLSM Subnetting question(s), completed on paper	<ul style="list-style-type: none">• Networking
		<ul style="list-style-type: none">• Apply the VLSM subnetting and configurations to a simulated network using Packet Tracer	<ul style="list-style-type: none">• Networking
*This Activity may be allowed to go over into the afternoon session with limitations			

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

Computer Hardware / System Setup

- Identify, install, and test hardware components
- Install and configure virtual machines
- Troubleshoot hardware failures
- Use disk, system, and file management tools
- Prepare hard drives for operating system setup
- Install, setup, and configure corporate productivity software products
- Install, setup, and configure utility software fulfilling corporate computing goals
- Create and test network cabling
- Install and verify correct operation of peripheral devices
- Demonstrate understanding of software licensing and its applications
- Perform structured cabling tasks
- Setup and network workstations

Configuring and Securing a System (Windows 10 / Ubuntu 18.04 LTS or later)

- Configure and verify proper home / small business computer security practices (e.g. anti-virus)
- Perform patch and update management based on best practices
- Create and update security policies and procedures to ensure security and reliability of system, network data, and best practices
- Install, configure, and verify basic security software and cryptographic processes
- Install and Configure Service(s) on servers, including virtual machines
- Use technical documentation including specifications and procedures
- Configure networking including shares, permissions, and printers
- Use utility software to benchmark software or hardware performance
- Utilize virtual environments to perform workstation desktop security
- Configure operating system functionality including tasks such as: setting themes and control panel settings
- Configure common home office and small business software operations
- Use built-in system tools to automate tasks



Troubleshooting

- Fix and document resolution using customer complaint descriptions
- Produce technical and end-user documentation
- Use available documentation and logs to identify and resolve problems
- Analyze and resolve common Desktop problems
- Analyze and resolve common home Network problems
- Troubleshoot software installation problems
- Use utility software to diagnose software or hardware problems
- Choose appropriate programs to troubleshoot problems
- Troubleshoot common home office and small business problems
- Troubleshoot common home office and small business software operations
- Examples of problems might include such things as inability to login, inaccessible websites, machine not starting properly, etc.

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), Internet Protocol addressing (IPv4 & IPv6), possibly on paper only
- Implement static and dynamic addressing services for hosts in a Local Area Network (LAN) environment, possibly on paper only
- 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 static and dynamic routing (OSPF)
- Implement, verify, and troubleshoot Wide Area Network (WAN) links
- Implement an IP addressing scheme and IP Services to meet network requirements in a Small Office Home Office (SOHO) network possibly using a virtualized environment (Packet Tracer), possibly on actual hardware. This environment would



include wired and wireless workstations, static and dynamic station addressing and network security.

- Install wireless hardware and software on client machines
- Implement, verify, and troubleshoot wireless deployment
- Configure, verify, and troubleshoot securing of wireless communication

3. Equipment, Material, Clothing

3.1. Equipment provided by Skills Manitoba

- Suitable computer hardware
- Linksys SOHO Integrated Router device
- Patch cables
- USB wireless NIC

3.2. Material provided by Skills Manitoba

- Cabling consumables
- Suitable computer hardware
- VMWare Workstation Pro 16 or newer virtualization software
- Windows 10 or newer
- Ubuntu Linux 18.04 or newer
- Cisco Packet Tracer (if required). If your school does not have access to this software, please contact Gursharn Wander or Tavaré Tulloch (see contact information at the end of scope)
- Graphic Screen Capture program. Competitor may have to use a screen capture program and a paint program to display/explain the completion of a task
- Cable crimping and testing equipment

3.3. Equipment and material provided by the competitor

- Writing instruments for written tasks.

3.4. Required clothing (Provided by competitor)

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



4. Safety Requirements

4.1. No personal protective equipment (PPE) is required

5. Assessment

5.1. Point Breakdown

Point Breakdown	/100
Computer Hardware / System Setup	25
Configuring and Securing a System	20
Troubleshooting	25
Networking	30

6. Additional Information

6.1. Use of Cellphones / Smartphones / Personal Media Devices

Use of cellphones, smartphones, or personal media devices **are not permitted**.

6.2. Tie (No ties are allowed)

- First tie-breaker: The competitor with the highest score in the Troubleshooting domain will be declared the winner.
- Second tie-breaker: The competitor who finishes all the assigned tasks first will be declared the winner.
- Third tie-breaker: The competitor who created and successfully tested the network cable first will be declared the winner.

6.3. Competition rules

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

6.4. 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



6.5. 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, and Digital.

Top Essential Skills for IT Network Systems Administration: Thinking, Problem Solving, Reading Text, Numeracy, Document Use, Writing, and Digital.

7. Manitoba Technical Committee Members

Name	E-mail Address
Tavaré Tulloch - MITT	tavare.tulloch@mitt.ca
Gursharn Wander- MITT	gursharn.wander@mitt.ca