



## SKILLS MANITOBA COMPETITION CONTEST DESCRIPTION

Competition Year	2020
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. New for 2020

There will be a **Take-Home portion** of the competition, where competitors must download a virtual machine and complete tasks prior to the In-Person portion on April 9<sup>th</sup>. Competitors are free to utilize any device that supports virtual machine applications. Competitors must also be aware, a weekend falls within the dates allocated, and that the start date falls within Spring Break. The virtual machine image will be made available at 9:00 am on Thursday, April 2<sup>nd</sup>. The completed virtual machine must be compressed using .zip format, uploaded to each Competitor's Google Drive, and the download link sent to [pbuskell@wsd1.org](mailto:pbuskell@wsd1.org) no later than 3:30 pm on Monday, April 6<sup>th</sup>. Competitors must familiarize themselves with the use of virtual machine software prior to April 2<sup>nd</sup> as no tech support will be given.

#### 1.2. Purpose of the Challenge

To evaluate each competitor's skills and to recognize excellence and professionalism in the field of IT Network Systems Administration.

#### 1.3. Time

##### Take-Home Portion:

Available from 9:00 am on Thursday April 2<sup>nd</sup> through 3:30 pm on Monday, April 6<sup>th</sup> [102.5 hours]



**In-Person Portion:**

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

**1.4. Duration of Contest**

Take-Home: 102.5 hours available to complete tasks

In-Person: 6 hours

**1.5. 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.

**1.6. Maximum 5 competitors per school.**



## 2. Contest Description

<h3>Take-Home Portion</h3> <h3>09:00 on April 2<sup>nd</sup> to 15:30 on April 6<sup>th</sup></h3>				
Time	Will Competitors have Internet Access?	Assessed Task	Domains	% of Total Competition Mark
Competitors will download and complete tasks prior to April 9th	<b>Yes</b>	Basic Configuration and Securing of a Virtual Machine	Configuring and Securing a System	<b>10%</b>
		Creating technical documentation to illustrate Troubleshooting issues	Troubleshooting	<b>15%</b>

<h3>In-Person Portion (April 9<sup>th</sup>)</h3>				
Time	Will Competitors have Internet Access?	Assessed Task	Domains	% of Total Competition Mark
8:00 to 11:00	<b>No</b>	Identifying labeled parts on Lab equipment and writing answers <b>on paper</b>	Computer Hardware / System Setup	<b>10%</b>



		A 20 to 30 question quiz, done <b>on paper</b>	Troubleshooting	<b>10%</b>
		VLSM Subnetting question(s), completed <b>on paper</b>	Networking	<b>20%</b>
		Setup of physical wireless LAN using SOHO router	Networking	<b>15%</b>
11:30 to 2:30	Yes	Installing a Virtual Machine	Computer Hardware / System Setup	<b>10%</b>
		Use Virtual Machine to provide a Service on physical wireless LAN	Configuring and Securing a System	<b>10%</b>

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

- Details on the Take-Home portion will be e-mailed to Competitors and/or Advisors no later than Thursday, March 19<sup>th</sup>.
- Download Links for the Take-Home virtual machine content will be e-mailed to Competitors at 9:00 am on Thursday, April 2<sup>nd</sup>.

### 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**

- Configure and verify proper home computer security practices (e.g. anti-virus)
- Perform patch and update management
- Create and update security policies and procedures to ensure security and reliability of system and network data
- Install, configure and verify basic security-related software and cryptographic processes
- Install Service(s) on servers, including virtual machines
- Use technical documentation including specifications and procedures
- Configure networking in a workgroup environment 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**

- Use a virtual machine to perform troubleshooting tasks
- Answer common troubleshooting questions in a written quiz
- 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), 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 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 virtualization software
- Windows 10
- Ubuntu Linux 16.04 or newer
- Cisco Packet Tracer (if required). If your school does not have access to this software, please contact Gursharn Wander or Paul Buskell (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 equipment (if needed for Tie-breaking)

#### **3.3. Equipment and material provided by the competitor**

- Take-Home:
  - A computer capable of running virtual machines.
  - A Google account (G-Mail and Google Drive)
- In-Person:
  - 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 According to Domain

Point Breakdown	/100
Computer Hardware / System Setup	20
Configuring and Securing a System	20
Troubleshooting	25
Networking	35

#### 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)

Note: All tie-breaking tasks will occur during the In-Person portion of the competition.

- First tie-breaker: The competitor with the highest score in the Networking 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 can create and successfully test a 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
Andrew Strahl – Assiniboine Community College	strahlad@Assiniboine.net
Gursharn Wander- MITT	gursharn.wander@mitt.ca
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