

13th PROVINCIAL SKILLS COMPETITION
2010 SKILLS CANADA NEWFOUNDLAND AND LABRADOR



39

IT AND NETWORK SUPPORT

Scope document Secondary and Post-secondary Levels
Friday, March 26th, College of the North Atlantic, PPD Campus – St. John's

Duration of Contest: 6hrs.

PURPOSE OF THE CHALLENGE

To evaluate each competitor's skills and to recognize outstanding competitors for excellence and professionalism in the field of IT and network support.

Skills and knowledge to be tested

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

Tasks: Competitors may have to complete some or all of the following:

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
- Install and configure operating systems
- Use disk imaging utilities
- Use disk, system, and file management tools

Networking

- Interpret network diagrams
- Calculate for, and apply to a network, an addressing scheme including Variable Length Subnet Mask (VLSM) Internet Protocol (IP) addressing
- Implement static and dynamic addressing services for hosts in a Local Area Network (LAN) environment
- Implement, verify, and troubleshoot securing of network devices
- Implement, verify, and troubleshoot traffic flow management using access control lists and network address translation
- 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

Windows Server 2008 Operations may include the following:

- Configure Domain Name System (DNS) for Active Directory
- Create and perform maintenance of Active Directory objects
- Configure 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

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- Enable and configure remote management
- Install and configure IIS
- Create, modify, and use scripts and automated tasks

Linux Server Operations may include the following:

- Configure a boot loader
- Package management (e.g. resolving dependencies, updating applications)
- Perform network configuration on both wired and wireless equipment
- Configure and manage local storage devices and file systems
- Configure and manage network storage devices and file systems
- Set and modify file and directory permissions and ownership
- Perform and verify backups and restores
- Access and perform Input/Output (I/O) against removable media
- Determine and manage unnecessary services and processes
- Monitor and troubleshoot network activity
- Perform remote management
- Create, modify, and use shell scripts
- Create, modify, and delete user and group accounts
- Perform job scheduling
- Configure server-based network services (e.g. Hyper Text Transfer Protocol [HTTP])
- Manage runlevels and system initialization from configuration files
- Configure system logging and log files
- Configure system security
- Perform makefile tasks to support compiling applications and drivers

Post secondary competitors may be required to also demonstrate the following:

- Implement an IP addressing scheme and IP Services (including summarization) to meet network requirements in a medium-sized network
- Configure, verify, and troubleshoot a switch with Virtual Local Area Network's (VLANs) and inter-switch communication
- Configure, verify, and troubleshoot basic router operation and routing

Equipment List

Equipment will be provided by either the competitor or Skills Newfoundland. The following list of equipment to be provided by the competitor is the minimum requirement for successful completion of the exam. **No software or computer storage devices are permitted on the competition site.**

Competitor will provide:

- Screwdrivers
- Anti-static band

Skills Newfoundland and Labrador will provide:

- Cabling consumables
- Linksys SOHO Integrated Router device
- Post-Secondary (in addition)
- Cisco Catalyst Switches with IOS 12.3 or higher
- Cisco Routers with IOS 12.3 or higher
- Suitable computer hardware
- VMWare virtualization software
- Windows Server 2008
- Windows 7
- Centos 5.2 or higher or Fedora core 9 or higher

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JUDGING CRITERIA

Competitors will be assessed on their ability to complete the above objectives
In the event of a tie, placement will be determined based on their answer to a theory based question.

POINT BREAKDOWN /1000:

Router/switch Administration	250
Windows Administration	250
Linux Administration	250
Network Infrastructure/Hardware	250

PROJECT DETAIL AVAILABILITY

Specific details of the project design will not be available outside of the competition times. Previous competition projects will not be posted on the web.

TECHNICAL COMMITTEE

- Jackie Reid - CNA
- Linda Pinsent - CNA
- Shawn Edwards - Pathix
- Michael Hopkins – M5

LEARNING RESOURCES/LINKS

VMware Server or player

http://downloads.vmware.com/d/info/datacenter_downloads/vmware_server/2_0
<http://www.vmware.com/download/player/download.html>

Microsoft virtual machines

<http://www.vmware.com/appliances/directory/cat/0?k=microsoft>

Linux virtual machines

<http://www.vmware.com/appliances/directory/cat/0?k=linux&c=0&submit=%3CSPAN%3ESearch%3C%2FSPAN%3E>

Router and Switch (model configuration)

http://www.cisco.com/en/US/docs/ios/12_2/configfun/command/reference/ffun_r.html
http://www.cisco.com/en/US/docs/switches/lan/catalyst2960/software/release/12.2_46_se/configuration/guide/scg1.html
http://download.cnet.com/Router-Simulator/3000-2051_4-10058296.html
http://www.bumpersoft.com/Education_and_Science/Teaching_Tools/Review_3880_index.htm