



# Provincial Scope Document

## *IT PC & NETWORK SUPPORT (Post-Secondary) 2010*

**Contest Length: 6 hrs**

**Registration: 8:00**  
**Contest Start: 8:30**

### **Purpose of the Challenge:**

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

### **Project Scenario:**

For the purpose of this competition the competitor is considered to be a Junior 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

### **Project Tasks**

#### **Hardware setup and initial configuration**

- Identify, install and test hardware components
- Troubleshoot hardware failures
- Install and configure virtual machines
- Prepare hard drives for operating system setup
- Install and configure operating systems in a multi-boot environment
- 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
- 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
- Work may be performed on physical or simulated Cisco hardware

### **802.11 Wireless**

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

### **Windows Server Operations**

- Configure Domain Name System (DNS) 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)
- Enable and configure remote management
- Configure, verify and troubleshoot IIS
- Configure, verify and troubleshoot Active Directory infrastructure
- Configure, verify and troubleshoot Active Directory Certificate Services
- Configure, verify and troubleshoot Network Policy and Access Services

### **Linux Server Operations**

- 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
- 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 delete user and group accounts
- Perform job scheduling
- Configure, verify and troubleshoot 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, 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
- Set up user-level security

## Skills Required

- Find faults and troubleshoot or assemble PC hardware.
- Install various operating systems.
- Establish predefined desktop settings.
- Identify, test, and use a variety of network cabling as required.
- Install applications.
- Establish various network topologies.
- Understand routing concepts and how they are implemented on Cisco routers.
- Set up network administration & security.
- Optimize network & system performance.
- Perform basic network administration.
- Understand switching concepts such as VLANs, Spanning Tree and Ethernet port characteristics.
- Configure a Cisco 2500/2600/2800 series router.
- Configure a Cisco 2900/3500 series switch.
- Understand various network protocols.
- Properly record system documentation.

## Equipment / Tools / Materials

### Supplied by Competitor:

- Work bench tools including pliers, screwdrivers, and proper anti-static accessories.

### Supplied by Committee as required:

#### *Software:*

- Windows 7 Professional
- Windows 2008 Server
- Red Hat Linux
- Novell SuSe Linux
- Software appropriate to support documentation (office suite, etc)
- Cisco Packet Tracer
- VMWare virtualization software

#### *Hardware:*

- Suitable computer hardware
- Linksys SOHO Integrated Router device
- Suitable work surface
- Power bars / surge protector
- Raw materials for task completion as required.

**Clothing Requirements:**

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

**Safety Requirements:**

Safety awareness/requirements will be maintained at 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 properly configure PC workstations & servers.
- Ability to properly install operating systems and application software.
- Ability to properly implement and configure directory services.
- Ability to properly connect and configure networking equipment.
- Safe utilization of trade tools and display of proper technique.
- Neatness of work area and space management.
- Complete, appropriate and neat documentation.
- In the case of a tie at the end of the competition, the competitor with the higher score in the general knowledge question(s) will be declared the winner. If the tie continues, then professionalism will be the deciding factor.

**Technical Committee:**

**Nolan Fretz, Okanagan College**  
**Randy James, BCIT**

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