



Contest Description

Edmonton Expo Centre, Edmonton

May 8 & 9, 2024

EVENT: IT and Network Support	LEVEL: Post-Secondary
START TIME: May 8: 8:30 am May 9: 8:00 am	LOCATION: Hall B, Edmonton EXPO Centre, Edmonton
DURATION: Two Days	EQUIPMENT DROP OFF, SET-UP AND TESTING MAY 7: 4:00PM – 5:30PM
WORLDSKILLS TRADE #: 39	

Please Note: This document is subject to change as competition information is updated. Competitors are responsible for staying up to date with the most recent information. Check the footer for last updated date. Changes will be highlighted in yellow.

CONTEST INTRODUCTION

Allow competitors to demonstrate their knowledge and challenge their skills in PC maintenance and network setup and support functions.

SKILLS AND KNOWLEDGE TO BE TESTED:

- The infrastructure systems portion of the competition will involve competitors configuring Windows and Linux environments. Windows and Linux activities will require the competitor to be fluent in graphical and command line (CLI) based configuration.
- Post-secondary-level networking may involve Cisco routers, switches, and ASA firewalls.
- The troubleshooting portion of the exam will involve competitors resolving issues in a pre-configured environment, challenges will be designed to simulate a help desk ticket system, and competitors will be required to document solutions to problems.

PROJECT DESCRIPTION

Infrastructure Systems (Windows/Linux):

- Understanding and implementing LDAP in Windows and Linux environments, including OpenLDAP and Active Directory.
 - Create and perform maintenance of Active Directory objects.
 - Configure, verify, and troubleshoot infrastructure services and roles.
 - Delegate administrative roles.
 - Implement and verify group policies.
 - Enable and configure remote management.



- Perform and verify backups and restores.
- Manage Active Directory/OpenLDAP Infrastructure.
- Configure server-based network services (ex., DHCP, DNS, SNMP).
- Implement infrastructure-based services (ex., Web server with SSL, SMB, email routing systems (ex., Postfix), and SFTP/FTP).
- Setup and modify file and directory permissions, special permissions, ownership, and share permissions. (Linux & Windows).
- Configure and verify system security.
- Perform job scheduling.
- Familiarity with Cacti, PRTG, Thunderbird, and RAID system configuration.
- The ability to set up file servers and configure local system firewalls.
- Understanding the importance of backups and implementing them in Windows and Linux environments.
- Perform automated server or workstation deployment. Understand Windows Deployment Services and how to deploy Windows and Linux operating systems.
- Set up user-level security, such as LDAP and NIS.
- Configure user access security with Pluggable Authentication Modules [PAM].
- Perform server security tasks using Linux-based software tools.
- Set up and configure server monitoring tools. (e.g., Syslog / SNMP).
- Implement email routing systems. (e.g., Postfix, send mail).
- Install system certificates for application use.
- Integrating Windows and Linux environments.
- Configuring and interpreting reports from monitoring systems, including PRTG.
- Knowledge of scripting languages and the ability to create scripts to automate tasks. (PowerShell, Bash, and Python).
- Perform virtual machine creation and management tasks using VMware Workstation and Hyper-V.

Cisco Networking:

- Configuring Cisco IOS/IOS XE routers and switches from the command interface.
- Implement, verify, and troubleshoot Local Area Networks (LAN), Wide Area Networks (WAN), Network Address Translation (NAT), and wireless networking services.
- Performing network administration and security tasks.
- Understanding switching concepts such as VLANs, Spanning Tree, Ethernet port characteristics, and link aggregations.
- Understanding routing concepts such as Static and Dynamic Routing protocols (RIP, OSPF, BGP, EIGRP), and First Hop Redundancy Protocols (FHRP).
- Understanding Cisco Best Practices and how to implement them.
- Configuring router and switch security technologies, including ACLs, RADIUS, SNMP, SSH/Telnet, VPN, and 802.1x.



- Implement, verify, and troubleshoot IOS images and licensing.
- Strong understanding of TCP/IP and the ability to perform subnet calculations and assign addresses, including variable length subnetting (IPv4 & IPv6).
- Knowledge of IPv4 and IPv6 and understanding of network security topics and common security practices such as encryption and configuration of ASA firewalls.

Troubleshooting:

- Ability to find faults and troubleshoot systems with improper configuration.
- Understanding of Windows Server and Desktop Systems, as well as Ubuntu Server and Desktop systems.
- Understanding of Cisco IOS/IOS XE and the ability to diagnose network components.
- Ability to interpret and make decisions based on gathered network and infrastructure monitoring data. (Ex. PRTG)
- Understanding how to implement, verify, and troubleshoot the technologies listed in the Infrastructure Systems and Cisco Networking sections.
- Properly recording system documentation and troubleshooting methodology.
- Time management skills.

All competitors must always exhibit workplace safety procedures and conduct themselves professionally.





EQUIPMENT & MATERIALS

Equipment and Materials Competitors Must Supply:

Writing and documentation utilities.	Pencil or Pens
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Equipment and Materials Supplied by Committee:

Computer Workstations	Computer Accessories (I.e. Mouse & Keyboard)
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Supplied Software:

Latest Ubuntu Server & Desktop LTS	Windows Server 2019
Windows 10	VMWare Workstation or Player
Putty	Packet Tracer
Cisco Images (IOS/IOS XE, ASA, etc.)	

JUDGING CRITERIA

- Competitor's ability to properly configure Windows, Linux, and networking systems in a virtual environment.
- Proper installation of operating system and application software.
- Demonstration of network connectivity and system administration.
- Competence in configuring the router, switch, and firewalls where required.
- Safely utilize trade tools and display of proper methodology.
- Neatness of work area and space management.
- Neat and proper documentation of PC inventory and configuration settings.
- In the case of a tie at the end of the competition, the winner will be determined by the highest score on the troubleshooting section will be the winner, if still tied, the highest score on the Cisco Networking section will determine the winner, if still tied, the highest score on the Infrastructure Services section will determine the winner.

Evaluation Breakdown

- Infrastructure Services – 30%
 - Windows and Linux Server
 - Windows and Linux Desktop
- Cisco Networking – 30%
- Troubleshooting – 40%
 - Windows, Linux, Cisco Networking

CLOTHING REQUIREMENT

Appropriate casual work clothing must be worn to compete. All clothing must be neat and clean and free of rips and tears. Casual wear such as shorts will not be permitted.





SAFETY

The health, safety and welfare of all individuals involved with Skills Canada Alberta are of vital importance. Safety is a condition of participation with Skills Canada Alberta and shall not be sacrificed for the sake of expediency. At the discretion of the judges and technical committees, any competitor can be denied the right to participate should they not have the required proper safety equipment and/or act in an unsafe manner that can cause harm to themselves or others.

ADDITIONAL INFORMATION

Skills Canada Alberta Regional and Provincial Rules and Regulations

[Regional and Provincial Rules and Regulations](#)

Test Project change at the Competition

Where the Test Project has been circulated to competitors in advance, PTC can change a maximum of 30% of the work content.

Lunch

Lunch for competitors will be provided by Skills Canada Alberta.

Parking & Venue Maps

<http://edmontonexpocentre.com/attend/parking/>

Parking is FREE for all attendees.

Opening Ceremonies / On-site Provincial Competitor Registration

Opening Ceremonies for the PSCC will take place on Tuesday May 7, 2024, at 6:00 pm in Hall D of the Edmonton EXPO Centre. Admission is free, and everyone is welcome to attend. It is important to note that competitor registration will open immediately following the Opening Ceremonies.

Awards Ceremony

The Awards Ceremony will take place on Thursday May 9, 2024, at 6:30 pm in Hall D of the Edmonton EXPO Centre. Admission is free and everyone is welcome to attend. The Awards Ceremony will be shown live at <http://skillsalberta.com/>





Team Alberta Information

Team Alberta will be selected at the PSCC Awards Ceremony. Gold medalists will then be eligible to participate at the Skills Canada National Competition (SCNC) on May 27- June 1, 2024, in Quebec City, QC. It is recommended that competitors review the SCNC contest description to be familiar with the national contest description and project at <http://www.skillscanada.com/>.

During the PSCC Awards Ceremony on Thursday May 9, 2024, gold medalists will be given their Team Alberta information package and will confirm their participation in the SCNC. Students must be present at the Awards Ceremony to claim their position on Team Alberta. If the Gold medalist is not able to attend SCNC, the next top ranking individuals will be asked to participate. If a student is not able to attend the Awards Ceremony a letter confirming the student’s interest in Team Alberta participation must be emailed to javierad@skillsalberta.com prior to the start of competition on May 8, 2024.

Please prepare your students in advance to accept a position on Team Alberta and outline how your school will support their participation.

Questions?

Please contact Whitney Koop at whitneyk@skillsalberta.com if you have any questions regarding the Contest Description.

Committee Members:

Gerald Chung (chair)
Shan Kampen
Anjesh Shrestha
Peter Estephan
Mehrshad Sahebsara

