



CONTEST DESCRIPTION / DESCRIPTION DE CONCOURS

IT-NETWORK SYSTEMS ADMINISTRATION TI-GESTION DE RÉSEAUX

POST-SECONDARY /
NIVEAU POSTSECONDAIRE

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1 THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

SCC is currently working with Employment and Social Development Canada (ESDC) in order to bring awareness to the importance of Essential Skills that are absolutely crucial for success in the workforce. Part of this ongoing initiative requires the integration and identification of Essential Skills in contest descriptions, projects, and project documents. The next phase and very important aspect of our Essential Skills (ES) initiative is to provide an ES report card to each competitor at the Skills Canada National Competition. The purpose of the ES report card is to inform the competitor about their current level of essential skills based on their competition scores. With this knowledge, the competitor will be made aware which essential skill may require improvement. Full implementation is expected in the 2017 Skills Canada National Competition.

The following 9 skills have been identified and validated as key essential skills for the workplace in the legend below:

¹Numeracy, ²Oral Communication, ³Working with Others, ⁴Continuous Learning, ⁵Reading Text, ⁶Writing, ⁷Thinking, ⁸Document Use, ⁹Digital

These essential skills have been identified with in section 2.3 and/or 3.2 of your Contest Description. The top three Essential Skills for your area of competition have been identified on your Project and all other supporting project documents.

2 CONTEST INTRODUCTION

2.1 Description of the associated work role(s) or occupation(s).

<http://skillscompetencescanada.com/en/careers/information-technology/it-network-support/>

2.2 Purpose of the Challenge

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

2.3 Duration of contest

12 hours

2.4 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.

3 CONTEST DESCRIPTION

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

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
No other competition document will be released prior to the competition	

3.2 Tasks that may be performed during the contest

Essential Skills

- Create, interpret and modify textual and graphical documentation.⁸
- Calculate and apply to a network, an IPv4 and/or IPv6 addressing scheme using subnetting and/or Variable Length Subnet Mask (VLSM).
- Troubleshoot hardware and/or software issues with network and/or desktop configuration.⁷
- Implement, verify and troubleshoot networking device security.

Hardware setup and initial configuration⁹

- Identify, install and test hardware components.
- Troubleshoot hardware failures.⁷
- Install and configure virtual machines.
- Use disk, system, and file management tools.
- Prepare and manage disk volumes including redundancy.

Networking^{7,9}

- Implement, verify, and troubleshoot Local Area Network (LAN), Wide Area Network (WAN), Network Address Translation (NAT) and wireless networking services.
- Implement, verify, and troubleshoot IPv4 and IPv6 routing protocols including Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP) and Border Gateway Protocol (BGP) on Layer 3 devices.
- Implement, verify, and troubleshoot route distribution and route summarization.
- Implement, verify, and troubleshoot spanning-tree operation.
- Implement, verify, and troubleshoot ether-channel operation.
- Implement, verify, and troubleshoot Virtual Local Area Networks (VLANs) and inter-VLAN communications.
- Implement, verify, and troubleshoot access control lists (ACLs) for IPv4 and IPv6.
- Implement, verify, and troubleshoot port security.
- Implement, verify, and troubleshoot Virtual Private Network (VPN) tunnel.
- Implement network monitoring and make decisions based on gathered data.⁷
- Implement, verify, and troubleshoot IOS images and licensing.
- Implement, Verify, and troubleshoot First Hop Redundancy Protocols (FHRP)

Windows Server Operations⁹

- Configure Domain Name System (DNS), Dynamic Host Control Protocol (DHCP), and Active Directory (AD)
- Create and perform maintenance of Active Directory objects
- Configure, verify, and troubleshoot infrastructure services and roles
- Delegate administrative roles
- Implement and verify Group Policies
- Manage server security, including windows firewall
- Perform data provisioning (i.e. shared resources, offline data)
- Perform and verify backups and restores
- Enable and configure remote management
- Manage Internet Information Service (IIS) services
- Automate tasks using batch files and PowerShell scripts
- Perform automated server or workstation deployment
- Manage Active Directory infrastructure
- Deploy Active Directory Certificate Services
- Manage Server upgrades and/or migrations including Active Directory services

Linux Server Operations⁹

- Application package management, including custom package sources
- Configure and manage network and local storage devices and their respective file systems including RAID
- Set and modify file and directory permissions, special permissions, and ownership
- Perform and verify backups and restores
- Monitor and troubleshoot network activity and services
- Perform remote management
- Create, modify, and use shell scripts with BASH
- Create, modify, and delete user and group accounts
- Perform job scheduling
- Manage and troubleshoot HTTP, and FTP services⁷
- Manage runlevels and system initialization from configuration files
- Configure and verify 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
- Implement security auditing for files and authentication
- Set up user-level security, such as LDAP and NIS
- Configure user access security with Pluggable Authentication Modules [PAM]

Essential Skills - ⁷Thinking (Problem Solving, Job Task Planning & Organizing), ⁸Document Use, ⁹Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- Suitable computer hardware
- Cisco Packet Tracer Software
- VMWare virtualization software
- Any edition of Windows Server 2012 R2 including both Full and Core editions
- Windows Server 2008 R2 for migration activities
- Windows 10
- Current version of Ubuntu (16.04 or later)

Note: Competitors should not expect access to the internet during the competition.

4.2 Equipment and material provided by the competitor

- Pen and paper

4.3 Required clothing (Provided by competitor)

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

5 SAFETY REQUIREMENTS

5.1 List of required personal protective equipment (PPE) provided by competitors

- No PPE required

6 ASSESSMENT

6.1 Point breakdown

POINT BREAKDOWN	/100
Windows Administration	25
Troubleshooting	25
Linux Administration	25
Network Infrastructure	25

7 ADDITIONAL INFORMATION

7.1 Consecutive translation

If consecutive translation is required on site, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

7.2 Software requirements

If French software is required the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this software might not be guaranteed.

7.3 Computer keyboard requirements

English Keyboards will be provided, if a French keyboard is required the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this keyboard might not be guaranteed.

7.4 Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

7.5 Tie (No ties are allowed)

In the event of a tie, the competitor with the highest score in the troubleshooting module will be declared the winner. If a second tie occurs, the competitor with the highest score in the networking module will be declared the winner and if a third tie occurs, the winner will be determined by the Linux module.

7.6 Competition Rules

Please refer to the competition rules of the Skills Canada National Competition.

8 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name	Email address
Alberta	Doug Warden	
Manitoba	Andrew Strahl	
Ontario - Chair	Nick Gommans	ngommans@infusion.com
Québec	Jean-Philippe Desbiens	
Newfoundland & Labrador	Brian Forward	
British Columbia	Nolan Fretz	
Prince Edward Island	Rob Blanchard	
Saskatchewan	Heath Armbruster	