



CONTEST DESCRIPTION

# **Cloud computing**

POST-SECONDARY

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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.

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

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

These essential skills have been identified in section 3.2 of your Contest Description and if applicable, in your Project and all other supporting project documents.

## **2 CONTEST INTRODUCTION**

### **2.1 Purpose of the Challenge**

To evaluate each competitor's skills and to recognize excellence and professionalism in the field of Cloud Computing

### **2.2 Duration of contest**

12 hours

### **2.3 Skills and Knowledge to be tested**

- The competition evaluates a competitor's competence in the design and implementation of information technology infrastructure in a public cloud environment.
- The public cloud environment used is Amazon Web Services.

### 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
Project	November 2020

#### 3.2 Tasks that may be performed during the contest.

The Cloud Computing skill covers foundational Cloud Computing services and baseline knowledge, network admin, systems admin, application deployment (including databases, system security, etc.) Students with systems admin skills, network admin skills and database deployment skills would be able to participate in the competition.

- **Systems Design/Deployment** – When designing and deploying a web application, the fundamental building blocks of being able to scale is understanding how to implement an architecture that can scale. Competitors will need to showcase their understanding in decoupling the database from the application, utilizing additional tools such as monitoring and auto-scaling.<sup>9</sup>
- **Network Design** – When scaling a web application and breaking up the workload into different tiers and services, the network design must ensure that only servers and services that should be public remain public. To ensure network security, the application should communicate with services on private networks where possible.<sup>7</sup>
- **High Availability** – In today's web applications high availability is an essential aspect. Competitors will need to keep this in mind and implement ways to ensure the web application can deal with issues and still remain a running application.<sup>7</sup>
- **Scalability** – In order to keep costs low when there is low usage and scale to meet high traffic to provide a consistent user experience, the application must scale or the application must be scalable. Scalability in every aspect of the web application allows the application to grow only where needed. Correctly implemented, this goes hand in hand with monitoring and automation.<sup>9</sup>
- **Automation** – Automation is one of the fundamental building blocks of being able to scale a web application. Automation of application deployment process, infrastructure provisioning automation and self-configuration.<sup>9</sup>
- **Security** – When scaling a Web Application, security at every layer of the application is essential. Where network traffic is allowed to come from, who can access the servers, what permissions are applied to the servers and users, who has access to the databases and data. Security can be applied on every aspect

of a Web application.<sup>7</sup>

- **Monitoring** – Monitoring has become the most important aspect of a web application. Being able to collect metrics and understand how the web application is behaving at all layers. Being able to use those metrics to scale up and down and use those metrics to make smart decisions and automation where possible<sup>1</sup>

*Essential Skills – <sup>1</sup>Numeracy, <sup>7</sup>Thinking (Job task planning and organization, problem solving, critical thinking), <sup>9</sup>Digital*

## 4 EQUIPMENT, MATERIAL, CLOTHING

### 4.1 Equipment and material provided by Skills/Compétences Canada.

- Table
- Chair
- Water Station
- Internet connection

### 4.2 Equipment and material provided by the competitor.

- Competitors are required to bring their own device and software. Each competitor can choose their own device so their workflow and process is to what they are familiar with.
- If competitors are bringing a computer or laptop from their school (instead of their personal computer), please ensure that the computer is unlocked so documents and possibly software can be saved/installed to the hard drive and technology support can be provided onsite. This may require access to CMOS settings.
- Minimum Recommended Hardware:
  - Wired Ethernet Connection
  - 4 GB of RAM
  - 100 GB Storage
  - Windows 10
- Required software
  - Google Chrome
  - Putty
  - AWS CLI

#### 4.3 Required clothing provided by the competitor.

- No special requirements

### 5 SAFETY REQUIREMENTS

#### 5.1 Safety workshop

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

#### 5.2 Personal protective equipment (PPE) provided by Skills Compétences Canada

- No PPE required

#### 5.3 Personal protective equipment (PPE) provided by the competitor.

- No PPE required

### 6 ASSESSMENT

#### 6.1 Point breakdown

POINT BREAKDOWN	/100
Systems/Network Design	20
High Availability	20
Scalability	20
Automation (Deployment)	20
Security	20

### 7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during competitor orientation.

TOPIC/TASK	SKILL-SPECIFIC RULE
Use of technology – USB, memory sticks	<ul style="list-style-type: none"> <li>• NTC Members – NTC Members are allowed to bring USB/memory sticks into the NTC Meeting Room. USB/memory sticks will be allowed to be taken outside of the meeting room at the end of each day.</li> </ul>

	<ul style="list-style-type: none"> <li>Competitors – Competitors are not allowed to bring USB/memory into the workshop.</li> </ul>
Use of technology – personal laptops	<ul style="list-style-type: none"> <li>NTC Members – NTC Members are allowed to bring laptops into the Expert Meeting Room. Laptops will be allowed to be taken outside of the meeting room at the end of each day.</li> <li>Competitors – No laptops are allowed in the workshop.</li> </ul>
Use of technology – personal cameras	<ul style="list-style-type: none"> <li>NTC Members – NTC Members are allowed to bring cameras into the NTC Meeting Room. Cameras will be allowed to be taken outside of the meeting room at the end of each day.</li> <li>Competitors – No cameras are allowed in the workshop until the completion of competition on day four.</li> </ul>
Use of technology – mobile devices	<ul style="list-style-type: none"> <li>NTC Members - No electronic devices are to be brought to any Competitors workstations under any circumstances unless with the approval</li> <li>Competitors – Electronic devices (Including mobile phones) must stay in Competitor bags (switched off or on silent) within the lockers provided. No electronic devices are to be brought to Competitors workstations under any circumstances unless with the approval</li> </ul>
Source file/notes	<ul style="list-style-type: none"> <li>Competitors – No notes may be brought into the workshop under any circumstances. All notes made at the Competitor workstation must remain on the Competitors desk at all times. No notes may be taken outside of the workshop.</li> </ul>
Equipment failure	<ul style="list-style-type: none"> <li>Competitors – In the occurrence of equipment failure Competitors must notify a NTC member immediately by raising their hand. The NTC Member will take note of the time that the Competitor is not able to make use of their equipment. Any time lost due to equipment failure will be provided to the Competitor at the end of the standard Module</li> </ul>



	<p>time.</p> <ul style="list-style-type: none"> <li>No additional time will be granted for work not saved prior to the equipment failure.</li> </ul>
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## 8 ADDITIONAL INFORMATION

### 8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, 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.

### 8.2 Ties

- Tiebreaker #1: (To be determined by NTC members)
- Tiebreaker #2:
- Tiebreaker #3:

**8.3** 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.

### 8.4 Competition rules

Refer to the [competition rules](#) for the Skills Canada National Competition which can be found on our website.

## 9 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
Newfoundland – Chair	Richard Spencer
Quebec	Mathieu Bergeron-Legros

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve ([nathaliem@skillscanada.com](mailto:nathaliem@skillscanada.com))