



## Internetworking

### 2023 SkillsUSA Michigan State Championships Contest Description Task and Materials List

#### **CONTEST LOCATION:**

Grand Rapids Community College  
Applied Technology Center (ATC)  
151 Fountain NE  
Grand Rapids, MI, US  
(616) 234-GRCC  
<http://www.grcc.edu/>

#### **RESUME:**

Each student must submit a one-page printed resume before the contest start at the contest site (present to contest coordinator, not judges). The resume is no longer submitted online. This is the only time that resumes can be turned in. Failure to do so will result in a 10 point penalty.

#### **TASKS TO BE PERFORMED:**

The contest will consist of five parts: End-to-end Hands-on, Structured Cabling, Troubleshooting, Written Test and Subnetting.

#### **End-to-end Hands-On:**

The purpose of the end-to-end hands-on component of the contest will be to test a contestant's ability to design, install, troubleshoot and maintain internetworks. Contestants will be given a topology and network requirements and will use the information with the supplied set of networking equipment (routers, switches, LAN/WAN cables) to install/configure the network and demonstrate that it runs properly.

#### **Structured Cabling:**

The purpose of the structured cabling component of the contest will be to test a contestant's cable construction and punch down abilities.

**Written Test:**

The purpose of the written test component of the contest will be to test a contestant's complete knowledge of internetworking and CCNA concepts. Questions from the written evaluation will be taken from the following general internetworking areas:

- OSI model and industry standards
- Network topologies
- IP addressing
- Networking components
- Basic network design
- Router configurations
- Routed and routing protocols
- LAN switching theory and VLANs
- WAN theory and design
- WAN technologies: PPP, Frame Relay, ISDN
- Network troubleshooting
- Wireless technology

**Troubleshooting:**

The purpose of the troubleshooting component of the contest will be to test a contestant's ability to isolate and solve problems within an existing internetwork.

**Subnetting:**

The purpose of the Subnetting component of the contest will be to test a contestant's ability to use Subnetting to develop an addressing scheme for an internetwork.

**STUDENT MUST SUPPLY (Contestants will not be allowed to share laptop/tools):**

- Resume - 1 page
- Laptop computer with:
  - Ethernet RJ45
  - Wireless
  - USB port
  - Administrative access (required for IP addressing changes during end-to-end hands-on component as well as to install PacketTracker software for troubleshooting component)
  - PacketTracker (if you are part of a Cisco Networking Academy and can pre-install the latest PacketTracker, that would be helpful)
  - HyperTerminal or PuTTY for consoling in
  - Console cable, Serial port or USB port, and the appropriate adaptor for consoling into a Cisco router or switch (DB9 to RJ45 or USB to serial)
- Copper cable terminating and punch down tools
- Safety glasses with eye shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)
- Cable tester
- LUNCH

**TECHNICAL COMMITTEE WILL SUPPLY:**

- All other support or test equipment not specifically required for the contestant to furnish

**CLOTHING REQUIREMENT (if different from National contest):**

For Men:

- White polo shirt with black dress slacks
- Black socks
- Black leather shoes
- No marks that identify the student

For Women:

- White polo shirt with black dress slacks or skirt
- Black socks or black or clear seamless hose
- Black leather shoes
- No marks that identify the student

Revised 3/23

**Scoring Sheet**  
**INTERNETWORKING**

<b>Items Evaluated</b>	<b>Possible Points</b>	<b>Contestant Number</b>
<b>End-to-end Hands-on</b>	<b>500</b>	
<b>Structured Cabling</b>	<b>200</b>	
<b>Written Test</b>	<b>150</b>	
<b>Troubleshooting</b>	<b>100</b>	
<b>Subnetting</b>	<b>50</b>	
<b>Safety, Clothing Penalty and Resume (minus 0-10% of total points)</b>		
<b>Subtotal</b>		
<b>TOTAL</b>	<b>1000</b>	