SKILLScomp
Skills competitions for VET development

Co-funded by the European Union

Networking Academy

WYŻSZA SZKOŁA INFORMATYKI i ZARZĄDZANIA
z siedzibą w Rzeszowie

Professional Skills Competition

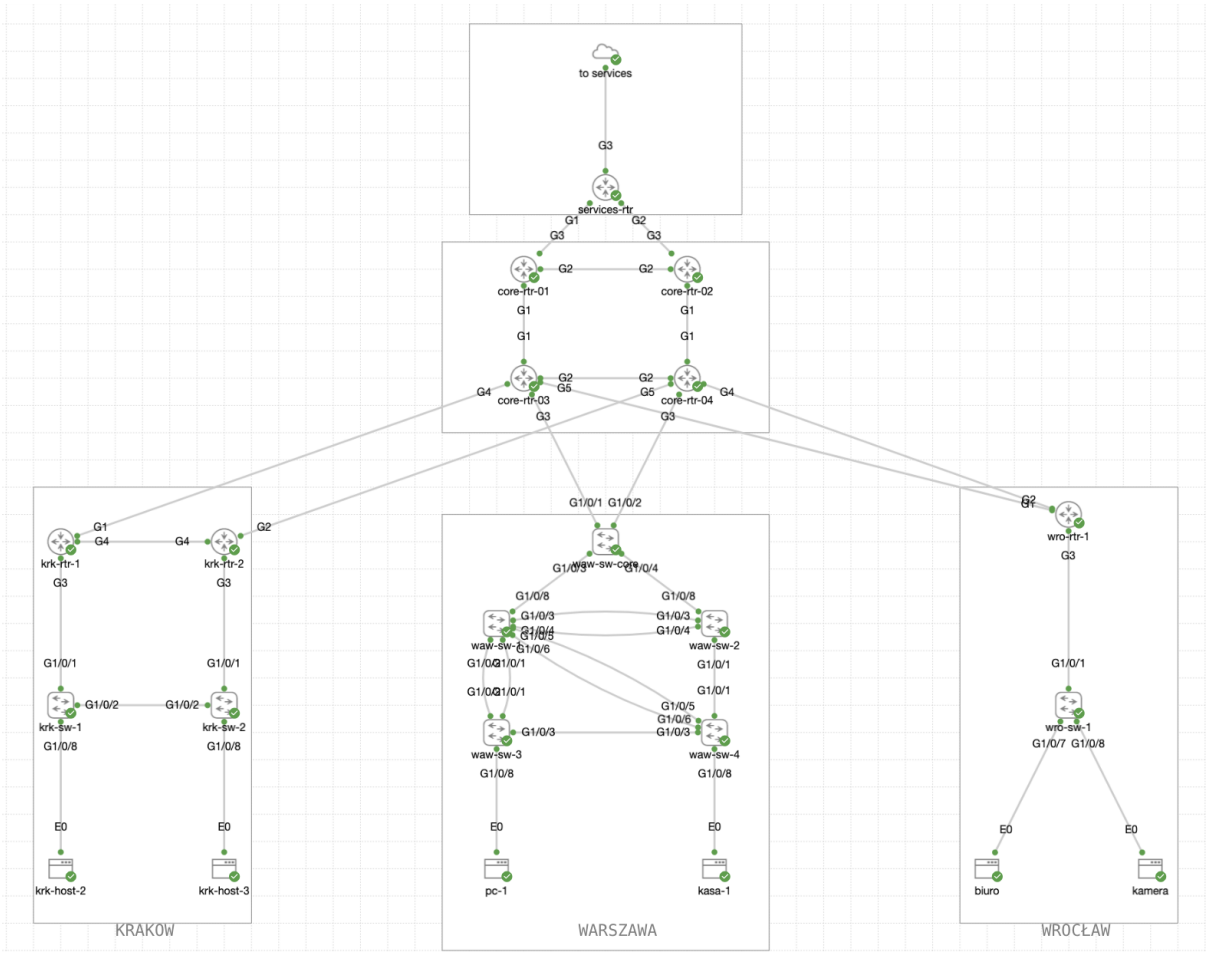
Network Systems Management

--- FINALE ---

DAY 2 - PART 2
(1 3:00 – 14:30)

1. Topology

The diagram below shows the full network topology that will be used on day two of the competition (also available for full viewing in the CML environment):



2. Access to the test environment

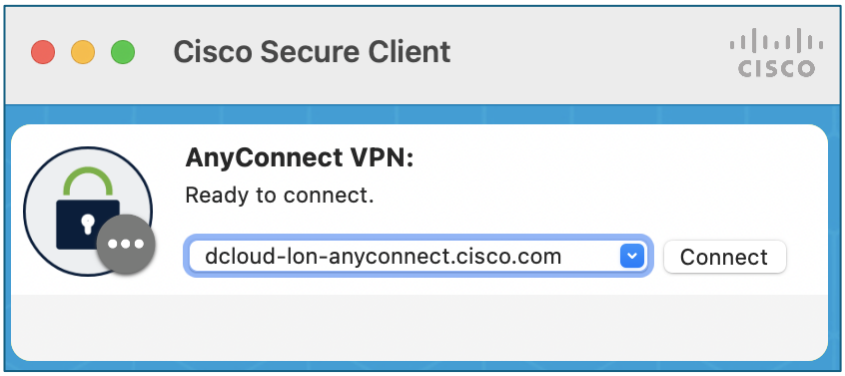
The entire competition was simulated in the Cisco dCloud environment using the following devices/versions:

1) Catalyst 8000v Series: Version : Cisco IOS-XE 17.09.01a
2) Catalyst 9000v Series: version : Cisco IOS-XE 17.10.1prd7
3) Alpine Linux, version: 3.16.2
4) Ubuntu Linux, version: 22.04.1 LTS

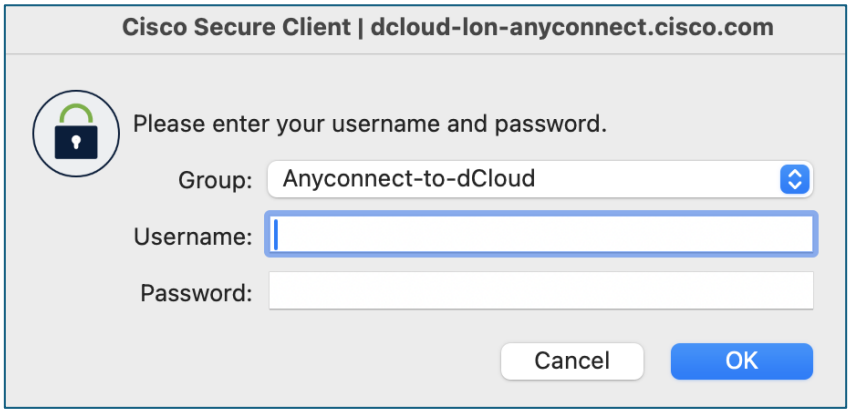
To gain full access to the test environment, follow these steps:

2.2. Cisco Secure Client VPN

1) Open the " **Cisco Secure Client** " application, enter the address: dcloud-lon-anyconnect.cisco.com



2) Click " **Connect** " and enter the username and password received from the competition organizer:



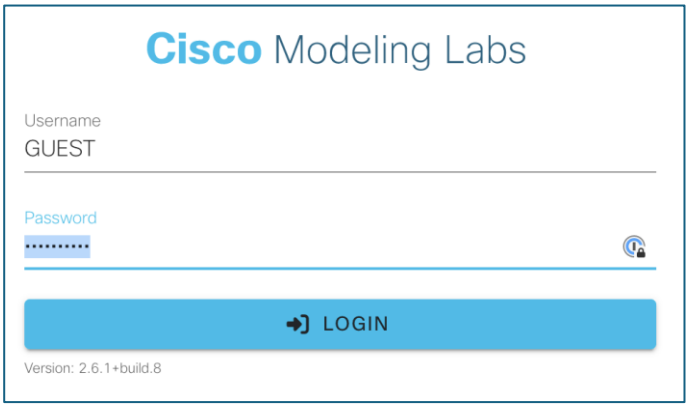
2.3. Cisco Modeling Labs (CML)

Cisco Modeling Labs (CML) provides access to a test environment that includes network topology, device access, and the ability to remotely power them on and off. To access CML, ensure you are connected via VPN (see section 2.2) and follow these steps:

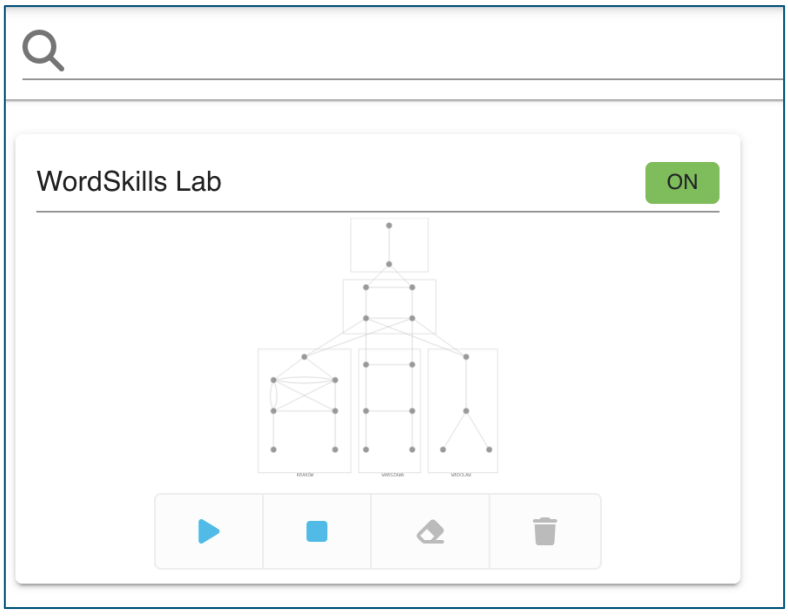
1) In your web browser, enter the address:
   https://198.18.133.111/

2) To log in to the system, use the following details:

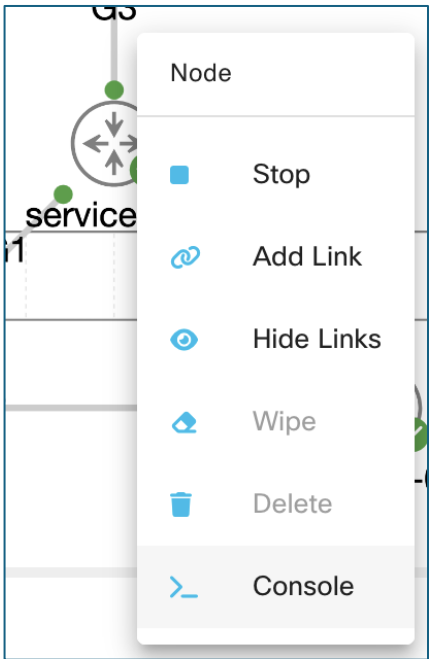
   Username : GUEST (uppercase required)
   Password : C1sco12345



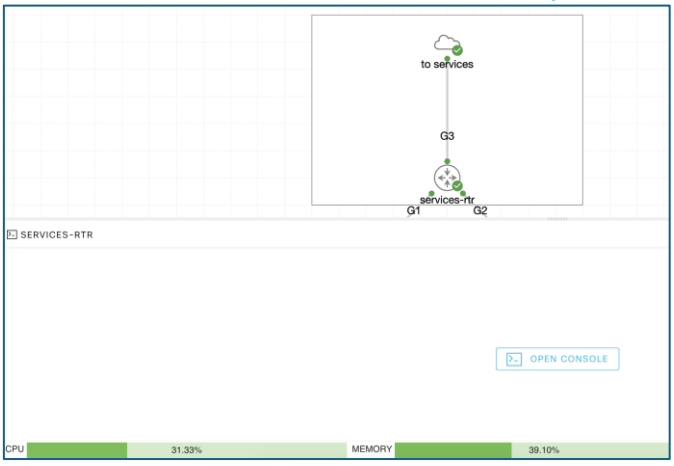
3) lab environment should now be initialized - click on the topology (avoid clicking on the start/stop/ wipe / delete buttons at the bottom of the area):



4) To access the console, right-click on a specific device (switch , router, host) and then select Console from the menu :



5) From the panel at the bottom of the screen, select: " Open Console ":



To log in to the switch/router, use the following details:

User : cisco

Password : C1sco12345

2.4. Main Server

, a virtual machine running the Linux operating system (Ubuntu) was connected to the topology simulated in the CML environment (to the router marked as **services -rtr).**

Access to the machine is possible directly from the workstation using the SSH protocol after connecting to the test environment via VPN.

IP address (remote access / mgmt) : 198.18.128.100
User : cisco
Password : C1sco12345

IP address (from lab/services -rtr side) : 198.18.10.100

2.6. Hostas

Additionally, additional hosts (e.g., krk-host-2, pc-1, camera, etc.) are connected to the network to verify that the network is functioning properly. These devices are accessed via CML in the same manner as network devices (see section 2.3), taking into account the following data:

User : cisco
Password : cisco

3. General notes

It is prohibited to:
- changes to the network topology (adding or removing devices, connections, etc.),
- password changes / console configuration / VTY / ...,
- communicating with guardians, other competition participants and third parties,
- using the Internet (except for the official documentation provided on cisco.com).

It is ordered:
- saving the configuration on the device (copy run start) after each part on all devices, which will then be copied during the break for full verification.

In the event of any environmental problems, the participant is obliged to report any observed problems directly to the committee.

4. Competition tasks [50 points]

4.1. Wrocław Branch (25 points)

In the Wrocław branch, the host named office has stopped receiving an IP address from the DHCP server in the Wrocław branch. Fix this issue so that communication is restored. The changes being implemented should maximize network security and prevent the connection of an external DHCP server in the branch.

Additionally, the host named kamera has lost the ability to communicate with the external network, including the address 172.31.255.255. Restore the network so that if any of the links connecting wro-rtr-1 to the routers in the core network fails, communication always works.

As part of the task:

1) Verify the existing network configuration,
2) Identify any issues that prevent required communication,
3) Propose the optimal solution, implement it on the network and fully test it.

Use the area below (next page) to describe precisely:

- identified problems in the network (problem description),
- selected solution method (solution description).

PROBLEM DESCRIPTION

SOLUTION DESCRIPTION

4.2. Communication between devices (25 points)

Communication between router wro-rtr-01 (172.18.255.1) and address 172.31.255.255 is not working. Analyze the problem and repair the communication. Ensure that communication will continue to work if any device or link fails.

As part of the task:

1) Verify the existing network configuration,
2) Identify any issues that prevent required communication,
3) Propose the optimal solution, implement it on the network and fully test it.

Use the area below (next page) to describe precisely:

- identified problems in the network (problem description),
- selected solution method (solution description).

PROBLEM DESCRIPTION

SOLUTION DESCRIPTION

PROBLEM DESCRIPTION

SOLUTION DESCRIPTION

CONGRATULATIONS – YOU HAVE COMPLETED STAGE:
DAY 2 / PART 2

SAVE THE CONFIGURATION ON ALL DEVICES, SUBMIT YOUR ANSWERS IN WRITING AND INFORM THE COMMITTEE!