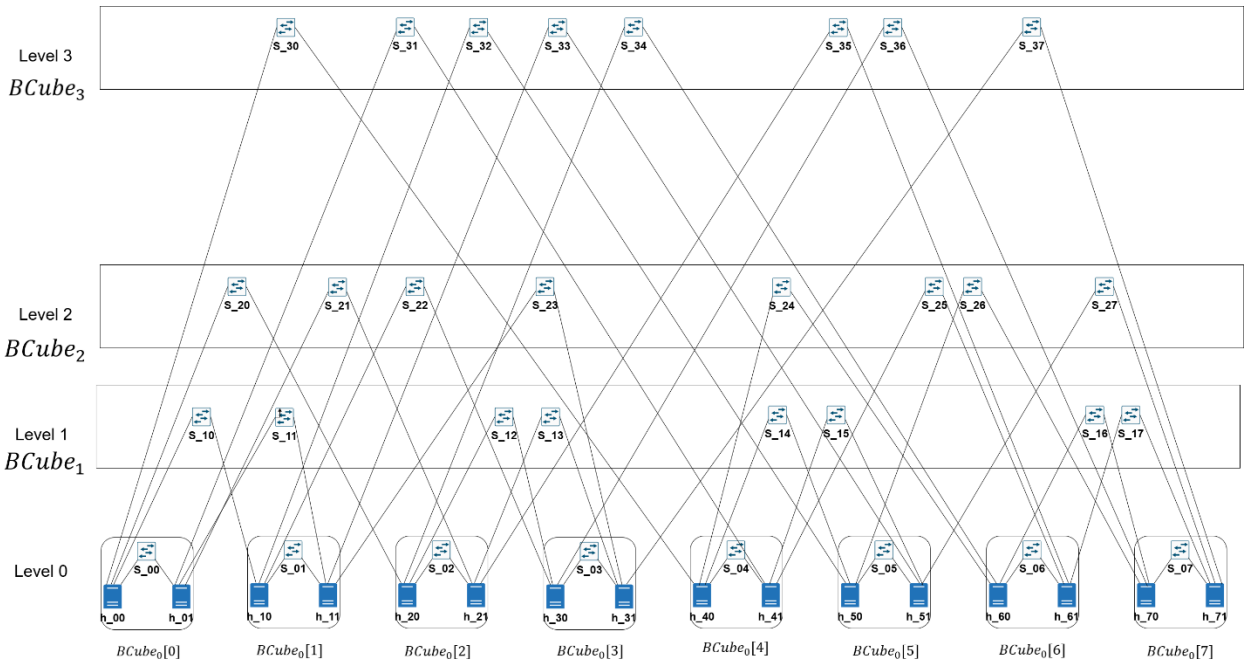
NEW YORK INSTITUTE OF TECHNOLOGY

INCS 775 – Data Center Security
Fall 2025
Dr: Zakaria Alomari
Assignment - 2
Total points: 100
Due date: Friday, *7 November 2025 / 11:59 PM*

Important: The session on Tuesday, immediately after the midterm exam, will be mainly devoted to a lab activity; however, we will also discuss the following topics:

- FlowVisor
- What is Flow Space
- What is Flow Space Slicing
- Flow space slicing using FlowVisor
- FlowVisor Installation
- FlowVisor Configuration
- Create flowspaces

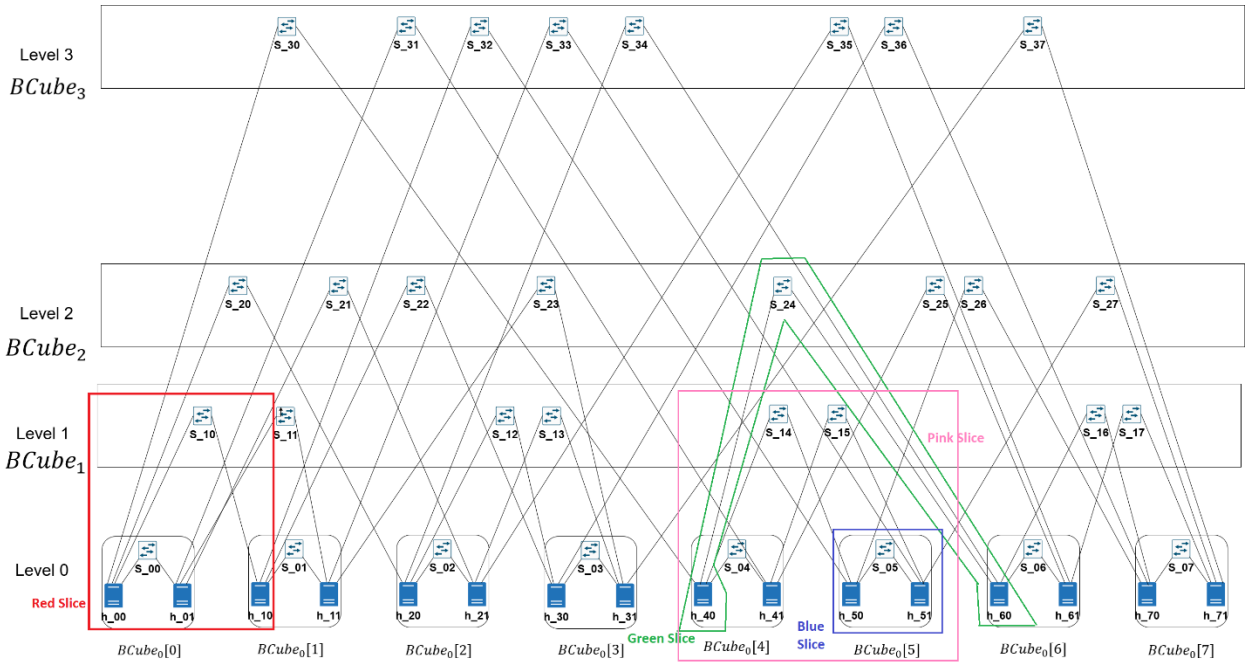
❖ Deploy the Data Center topology shown below and utilize a Python script to build a BCube Topology using Mininet.



❖ Create the Red Slice, Green Slice, Blue Slice, and Pink Slice using FlowVisor:

- Red Slice spans **h_00**, **h_01**, **h_10**, **S_00, and S_10**. It enables bi-directional communication between only all the hosts in this slice (**h_00**, **h_01**, and **h_10**). This slice will be controlled by a controller running on TCP port **4000**.
- Green Slice spans **h_40**, **h_60**, and **S_24**. It enables bi-directional communication between only all the hosts in this slice (**h_40**, and **h_60**). This slice will be controlled by a controller running on TCP port **5000**.
- Blue Slice spans **h_50**, **h_51**, and **S_05**. It enables bi-directional communication between only all the hosts in this slice (**h_50**, and **h_51**). This slice will be controlled by a controller running on TCP port **6000**.

- Pink Slice spans **h_40, h_41, h_50, h_51, S_04, S_05, S_14** and **S_15**. It enables bi-directional communication between only all the hosts in this slice (**h_40, h_41, h_50, and h_51**). This slice will be controlled by a controller running on TCP port **7000**.



What to submit?

- Put the following files inside a compressed folder named **<lastname_firstname.zip>**
- Create a text file called **Group_info** and fill it with the **names** and **student IDs** of each group member.
- **Custom_BCube_Topo.py** - - script containing the code to construct the BCube topology using Mininet.
- Files created by executing the following commands:
  - `fvctl -f pwd list-slice-info Red &>Red` (5)
  - `fvctl -f pwd list-slice-info Green &>Green` (5)
  - `fvctl -f pwd list-slice-info Blue &>Blue` (5)
  - `fvctl -f pwd list-slice-info Pink &>Pink` (5)
  - All the flowspace allocated to the Red slice **&>Red_FS** (15)
  - All the flowspace allocated to the Green slice **&>Green_FS** (15)

- All the flowspace allocated to the Blue slice &>Blue_FS (15)
- All the flowspace allocated to the Pink slice &>Pink_FS (15)
- Displays all flowspace rules currently managed by FlowVisor, illustrating how network traffic is partitioned and assigned to various SDN controllers (or "slices"). This is achieved using the following command:

  ```
  fvctl -f pwd list-flowspace &> flowspace
  ```
  (20)