Experiment Task Design:
In this lab, students can create a simple network topology in CloudLab. The student will login the CLOUDLAB website, create an experiment profile, and create a topology that includes four instances of XEN VM (Virtual Machine) linked together. The student will then instantiate the topology by selecting a cluster that is available. After the topology is instantiated, the student then sends Ping from one note to every other node to confirm that the topology is created successfully.

Submission:
Complete step 1, 2 and 3. Attach the topology view screenshot. List the steps to create experiment profile and explain how to test connectivity.

Students can refer the link (http://docs.cloudlab.us/cloudlab-tutorial.html) for more details about creating profiles on CloudLab. Students should have an account of either CloudLab or GENI or any other federated services like EmuLab to access CloudLab. CloudLab login page: https://www.cloudlab.us/login.php

Step 1: Create Profile
Create a profile with 4 Xen VMs. You can select UBUNTU16 or UBUNTU14 as your choice of Operating System. Hardware type can be any. Node type will be emulab-xen. For the links select Link type as Ethernet. Give a name to the topology with a description. Once the topology has been created click on Accept and then create. In the next window instantiate the profile.

![Figure 1: Create experiment profile](image-url)
Figure 2: Add nodes to your topology. In this case 4 XEN VMs.

Figure 3: Give details of each node by selecting Node type, Hardware type, disk image etc.
Step 2: Start Experiment:

To start an experiment, select a cluster that is available. For this lab select the one that is available. You can check the availability by hovering on the Green dot next to each cluster name. Click on finish when done. It will take some time for the profile to boot up.
Step 3: Test connectivity by pinging all nodes.

Students can open the terminals for each node by clicking the respective node and selecting shell. Use “ifconfig” command to get the IP address of each node. From node-0 ping all other nodes to test connectivity.

Figure 7: Topology view

Figure 8: Open a new shell for each node.

Figure 9: Ping test