



UNIVERSITY OF
SOUTH CAROLINA

Cyberinfrastructure Training Lab User Guide

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Award 1829698

“CyberTraining CIP: Cyberinfrastructure Expertise on High-throughput
Networks for Big Science Data Transfers”

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Overview

This document guides the user how to use the NETLAB+ environment. In the following sections, the instructions for initial login, scheduling a lab reservation and accessing the virtual lab are presented.

Objectives

By the end of this lab, the user should be able to:

1. Set the initial configuration of the account.
2. Schedule a lab reservation.
3. Navigate into the NETLAB+ environment.

Guide roadmap

This guide is organized as follows:

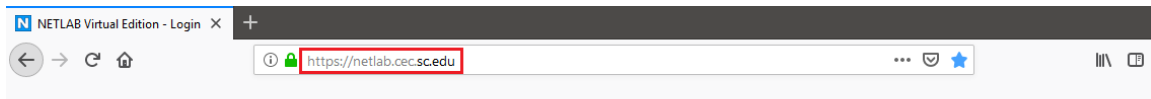
1. Section 1: Initial login.
2. Section 2: Scheduling a reservation.
3. Section 3: Navigate NETLAB+ environment.

1 Initial login

After submitting your application, the administrator will provide you the URL of the NETLAB+ system, along with a username and a temporary password.

Step 1. To login, open you web browser and type the following URL:

```
https://netlab.cec.sc.edu/
```

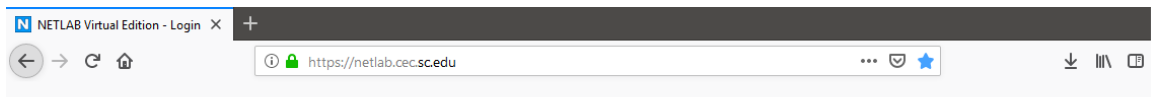
A login form for netlab.ccc.sc.edu. It has a title "netlab.ccc.sc.edu" and two input fields: "Username" and "Password". Below the fields is a blue "Login" button.

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Step 2. Type the username and the temporary password provided by the administrator then, click on *Login*.

A login form for netlab.ccc.sc.edu. The "Username" field contains the text "testuser". The "Password" field contains seven dots, indicating a masked password. The "Login" button is highlighted with a red box.

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Step 3. Type a new password that meets the following requirements:

- Not found in the common dictionary and not too simple.
- 7 or more ASCII characters.

- Contain both numbers and letters.

Click on *Submit* in order to proceed.

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Welcome, testuser!

This is the first time you have logged into this account.
You will now be asked to provide some account settings. These can be changed later.

Change Password - testuser

New Password

Retype New Password

Step 4. You will be prompted to enter your email address. This field may already contain a value if an email address was entered at the time your account was created. You may edit the email address if needed. Entering an email address is optional. Click on *Submit* to proceed.

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Please enter a valid e-mail address.
You can leave this blank if you do not want to receive e-mail from the system.

Change E-mail Address

E-mail Address

Step 5. Next, you will select your local time zone and your preferences for dates, times and calendars. These settings are especially important to ensure that the information is displayed accurately when using the scheduler. You can modify the time zone later if necessary.

Enter your preferences for dates, times, calendars and clocks.
When traveling, you can change your time zone to match the local time.

Date and Time Settings

Time Zone: (GMT-05:00) Eastern Time (US & Canada) ▾

Date Display Format: YYYY-MM-DD (2016-09-15) ▾

Time Display Format: 24 Hour (15:37) ▾

First Day of Week: Sunday ▾

[Submit](#) [Help](#)


Now, your account is ready to use.


2 Scheduling a reservation

After a successful login, a dashboard will be displayed.

Step 1. To schedule a lab reservation, click on *New Lab Reservation*.

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[Help](#) [Schedule ▾](#) [View ▾](#)  testuser


 Scheduled Lab Reservations


You have no scheduled lab reservations.

[New Lab Reservation ▾](#)

Step 2. Click on *Schedule a Lab for Myself*.

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[Help](#) [Schedule ▾](#) [View ▾](#)  testuser

 Scheduled Lab Reservations

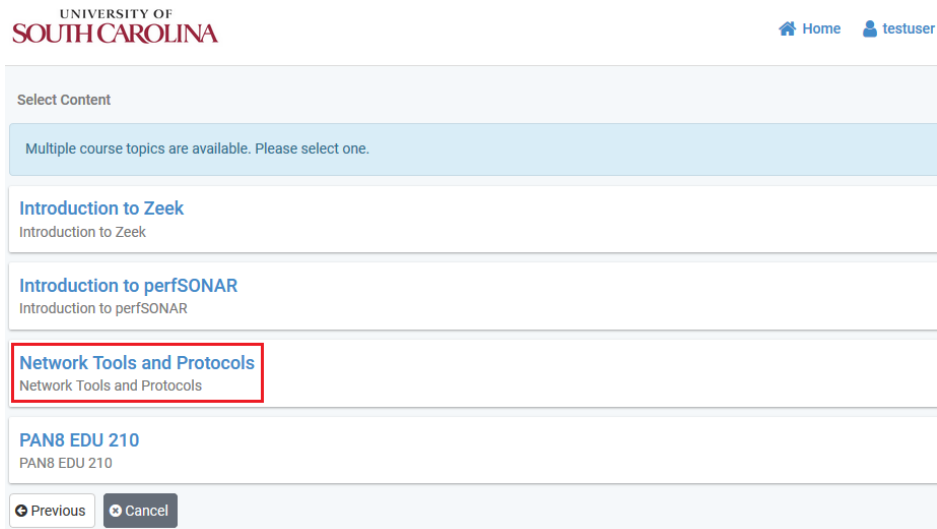
You have no scheduled lab reservations.

[New Lab Reservation ▾](#)

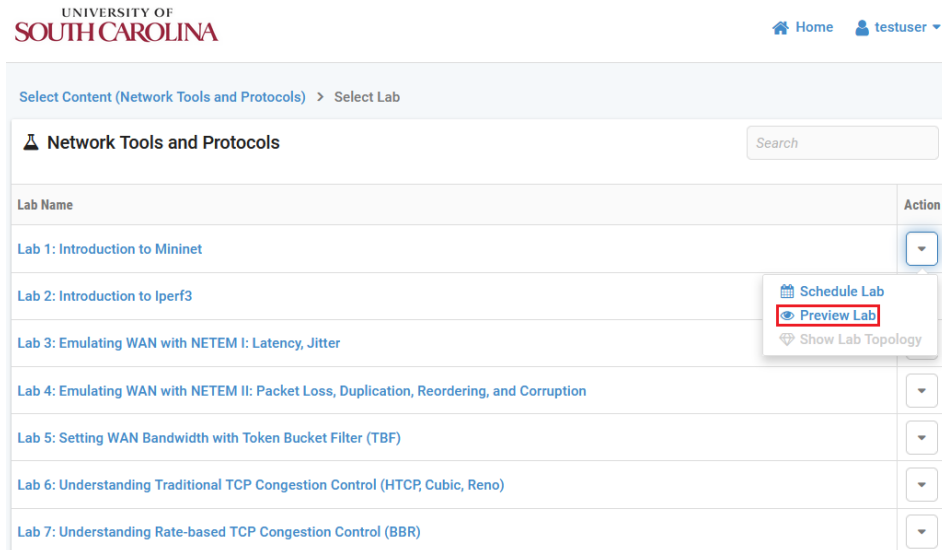
[Schedule Lab for Myself](#)

[Schedule Lab for My Team](#)

Step 3. Now, you can select the content you are interested in. In this example, it is selected *Network Tools and Protocols*.



Step 4. Next, the list of labs will be displayed. The user can click on *Action* then, click on preview lab to display the content associated to a specific lab.



Step 5. Select a lab content in order to proceed. In this example, *Lab 1: Introduction to Mininet* is selected.

Select Content (Network Tools and Protocols) > Select Lab

Network Tools and Protocols

Lab Name	Action
Lab 1: Introduction to Mininet	▼
Lab 2: Introduction to Iperf3	▼
Lab 3: Emulating WAN with NETEM I: Latency, Jitter	▼
Lab 4: Emulating WAN with NETEM II: Packet Loss, Duplication, Reordering, and Corruption	▼
Lab 5: Setting WAN Bandwidth with Token Bucket Filter (TBF)	▼
Lab 6: Understanding Traditional TCP Congestion Control (HTCP, Cubic, Reno)	▼
Lab 7: Understanding Rate-based TCP Congestion Control (BBR)	▼

Step 6. The POD scheduler will be displayed, allowing you to schedule a reservation for the selected lab. To select a reservation time, scroll down the table as needed to display available time-slots. The red line indicates the current time. If you click on the red line, you will be scheduling a POD right away.

Pod Scheduler

October - 2019

Selected Day: **October 1, 2019**

Current Time: **16:43** Eastern Time (US & Canada)

	NTP_H1_1201	NTP_H2_1202	NTP_H3_1203	NTP_H1_1204
16:00				
17:00	Reservation 4246			
18:00				
19:00				

Previous Cancel

Step 7. Select a reservation time by clicking on the calendar icon.

 Add Reservation

Pod NTP_H2_1202

Reservation Type Individual Self Study


Class Name Cyberinfrastructure Training

Reserve For testuser

Lab Exercise Lab 1: Introduction to Mininet


Time Zone Eastern Time (US & Canada)

Start Time 2019-10-01 16:49

End Time 2019-10-01 19:00 

Length of Reservation 2 hrs.

Step 8. You will be allowed to schedule a lab no more than 6 hours. In the figure below, the lab reservation lasts 2 hours.

 Add Reservation

Pod NTP_H2_1202

Reservation Type Individual Self Study


Class Name Cyberinfrastructure Training

Reserve For

Lab Exercise

Time Zone

Start Time

End Time 2019-10-01 19:00 

Length of Reservation 2 hrs.

Step 9. Click on *Submit* to start your reservation.

 Add Reservation

Pod NTP_H2_1202

Reservation Type Individual Self Study

Class Name Cyberinfrastructure Training

Reserve For testuser




Lab Exercise Lab 1: Introduction to Mininet

Time Zone Eastern Time (US & Canada)

Start Time 2019-10-01 16:49

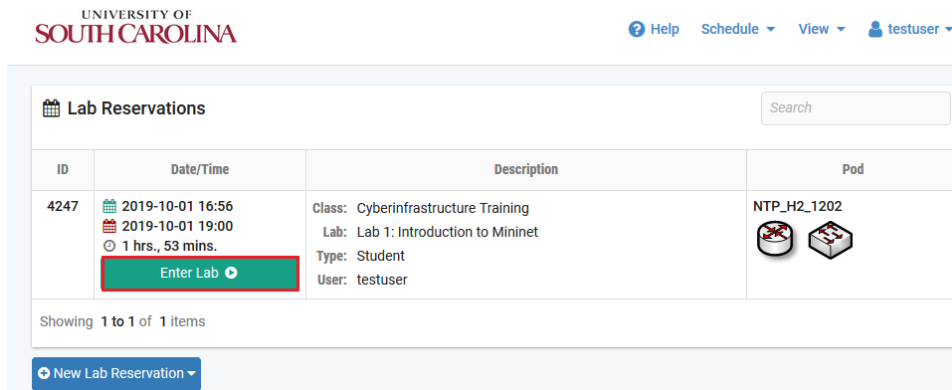
End Time 2019-10-01 19:00 

Length of Reservation 2 hrs.




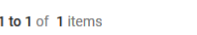

  

3 Navigate NETLAB+ environment

Step 1. At the scheduled time of the lab reservation, the *Enter lab* button will display. Select the button to enter the lab and display the lab access interface.



The screenshot shows the University of South Carolina NETLAB+ interface. At the top, there is a navigation bar with 'Help', 'Schedule', 'View', and a user profile for 'testuser'. Below this is a 'Lab Reservations' section with a search bar. A table lists a reservation with ID 4247, scheduled for 2019-10-01 from 16:56 to 19:00. The reservation details include: Class: Cyberinfrastructure Training, Lab: Lab 1: Introduction to Mininet, Type: Student, and User: testuser. The 'Enter Lab' button is highlighted with a red box. The pod is identified as NTP_H2_1202. At the bottom, there is a 'New Lab Reservation' button.

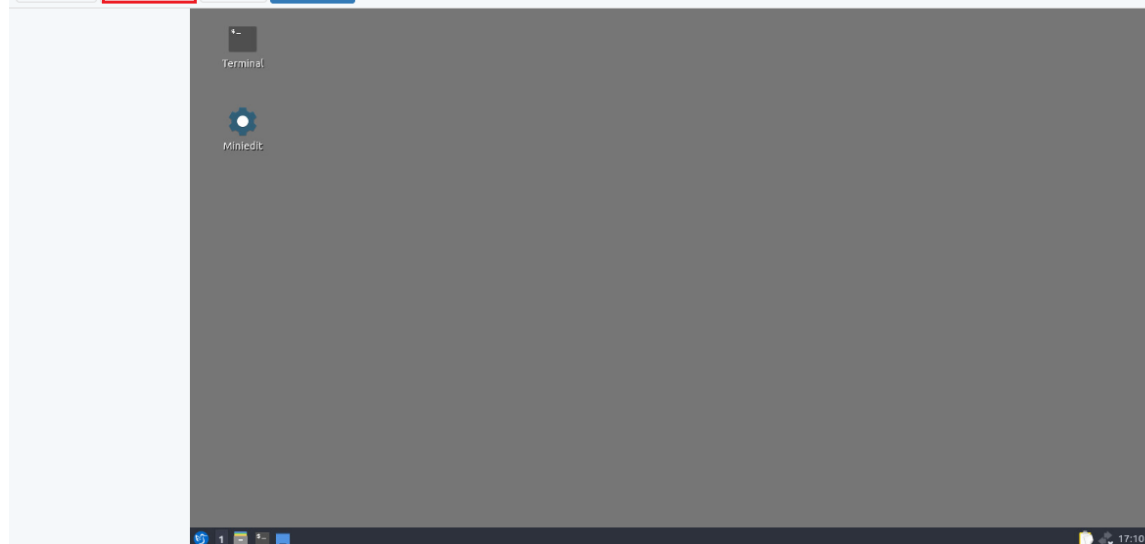
ID	Date/Time	Description	Pod
4247	 2019-10-01 16:56  2019-10-01 19:00  1 hrs., 53 mins. 	Class: Cyberinfrastructure Training Lab: Lab 1: Introduction to Mininet Type: Student User: testuser	NTP_H2_1202 

Step 2. The lab topology will be displayed. In this example, the lab topology shows one device. To access the Client, click on the icon or select the *Client* tab.

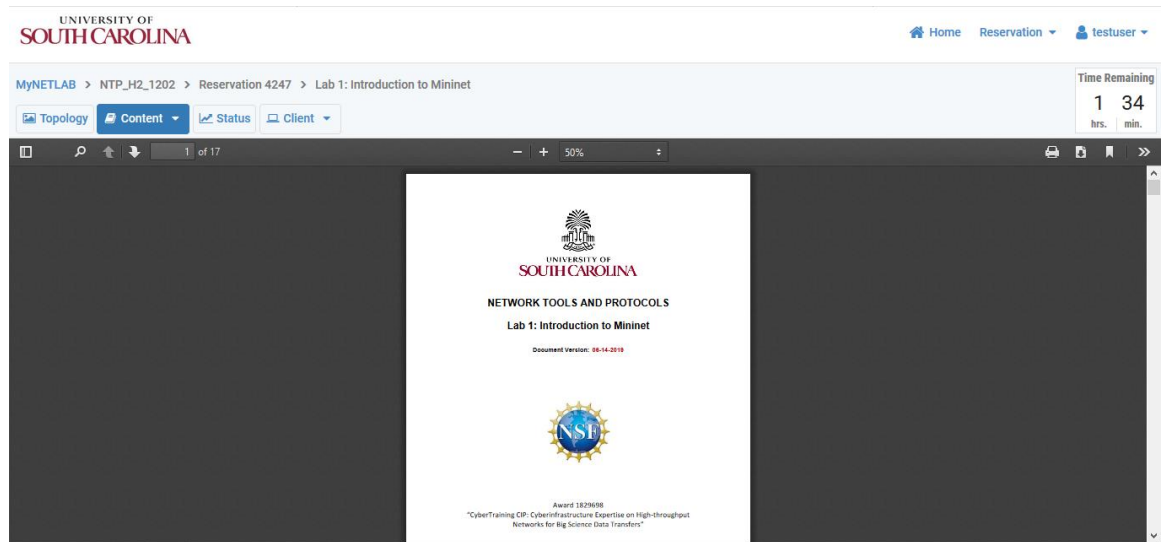


Step 3. Now, you ready to start with the lab. In order to display the lab manual, click on *Content*.

Notice that this POD has just one device associated to the topology. In labs like perfSONAR or Zeek, the topology consists in more devices (i.e. DTNs, routers and PCs) which are represented with the corresponding icons.



Step 4. The *Content* tab shows the lab manual, which is the instructional material associated with the lab. You can scroll down the document to start doing the lab.



This concludes the guide.

References

1. Network development group Inc, "Student Guide," 2019 [Online]. Available: https://www.netdevgroup.com/support/documentation/netlabve/netlabve_student_guide.pdf