

FABRIC Educational Materials

Tutorial: Webserver

Introduction

The goal of this exercise is to give user hands-on experience installing and interacting with a web server. User will install and start a web server, generate a simple HTML file, and use a client node to retrieve the file.

Running the Tutorial

- The tutorial has three Jupyter notebook:
 - **CreateSlice.ipynb**: Creates the FABRIC slice/topology needed for this tutorial
 - **webserver.ipynb**: Configures the IPv4/IPv6 network address, installs tools needed and then begins the webserver tutorial
- To run the tutorial:
 - Login to the FABRIC Portal and JupyterHub
 - Login to the [FABRIC Portal](#)
 - Login/connect to the [FABRIC JupyterHub](#)
 - Download the latest copy of the tutorials from GitHub
 - Open a terminal in JupyterHub by clicking the "Terminal" tile under "Other" in the Launcher tab
 - In the terminal window, type the following commands to download (pull) the latest version of the set of tutorials from Github

```
mkdir teaching-materials
cd teaching-materials
git clone https://github.com/fabric-testbed/teaching-materials.git
```

- Run the Tutorial Notebooks
 - In the left-hand column of JupyterHub, navigate to the Webserver tutorial
 - Open and execute the CreateSlice.ipynb notebook
 - Then open and execute the steps on webserver.ipynb

Overview of the Notebooks in this Tutorial

Create Slice Notebook

- In this notebook you will request a slice that contains three nodes (ND1, server, and ND2) and two Layer-2 networks (LAN) with the following configuration:

```
ND1 <-> LAN 1 <-> server <-> LAN 2 <-> ND2
```

- Each node should have the following requirements:
 - NIC_Basic model
 - "default_ubuntu_20" image
 - 1 cores
 - 2 ram
 - 10 disk space
- To successfully run this notebook you should only need to run the code blocks in order from top to bottom
- **Notes:** If your slice creation fails you can just try to specify a site in the second code block run them again. (you can get a site from "https://portal.fabric-testbed.net/" by looking at the map, use the name **outside** of the parenthesis and make sure the site chosen is up)

Webserver Notebook

- To successfully run this notebook you need to run the code blocks first (*Retrieve Slice*) and then follow the steps in (*Guided Experiment*):
 - Retrieve Slice: This step is not required but it will allow you to easily access the nodes in the slice you will use for the experiment.
 - Guided Experiment: This is the Experiment, To complete this section just follow the provided instructions to complete the exercise.
 - Assignment: you will answer questions and use what you learned to send codes to the server to see if you can get a response out of the server. Lastly you will delete the slice to clear resources you used.
 - **Notes:** In the case the slice fails to delete please examine the experiment tab on the fabric portal and delete the corresponding slice if it was not already deleted

Additional Information

- FABRIC Learn Website: If you encounter problems, questions, or suggestions, please navigate to the FABRIC Knowledge Base at <https://learn.fabric-testbed.net/>
- FABRIC Teaching Material Github: <https://github.com/fabric-testbed/teaching-materials>
- This assignment was originally written for the GENI network (<https://groups.geni.net/geni/wiki/WebServerExample>), but has been converted to run in FABRIC.