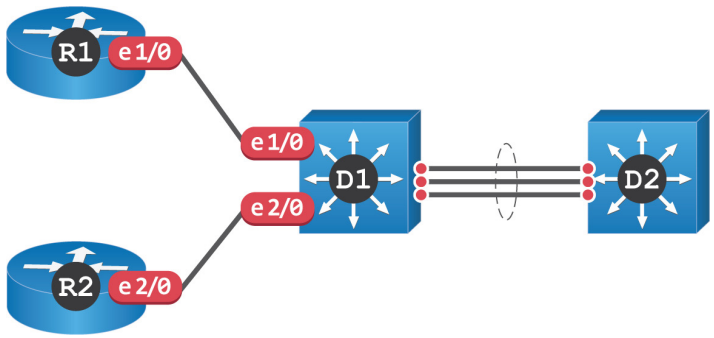
Cisco IOU-Web

Quick Lab Creation Guide

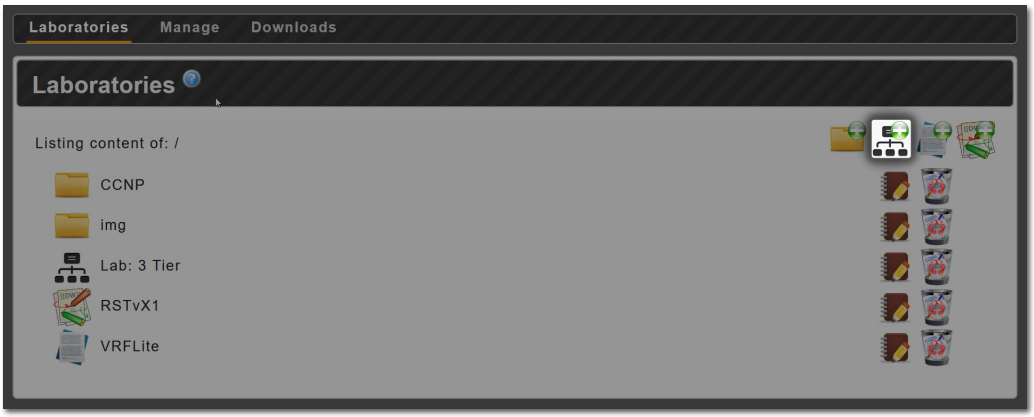
Note: Before creating a lab, it is highly advised that you already have a topology in mind. It will make netmapping a lot easier.

For this guide, this will be the example topology:

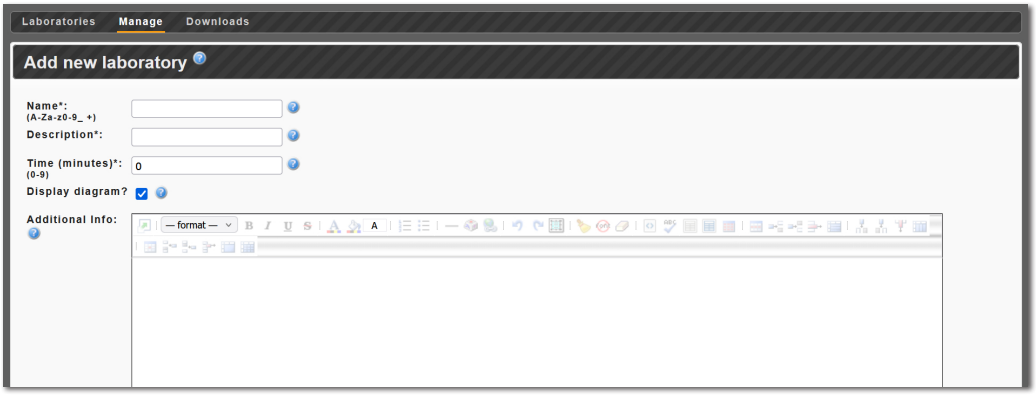


A. Create a lab

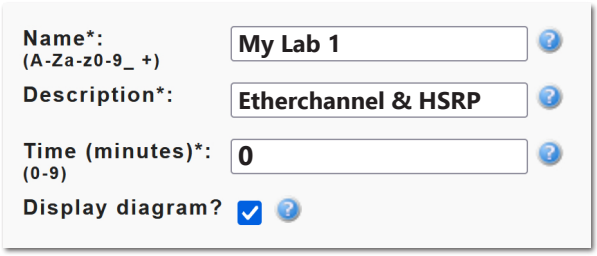
1. Starting from the **Laboratories** page, click on the **Create Lab** icon.



This will bring up the **Add New Laboratory** page.



2. Make sure to fill in the **Name** and **Description** for the lab as it is required.

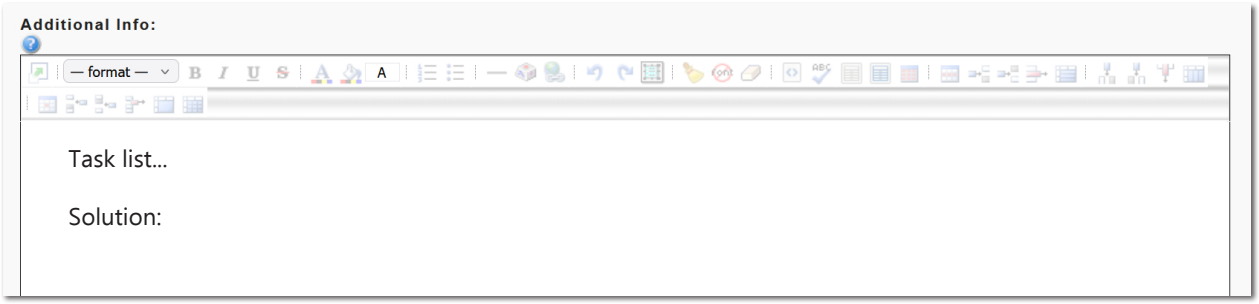


The **Time** setting does not work at all. Simply leave it at zero.

The **Display diagram** will display the topology of the lab after it is created.

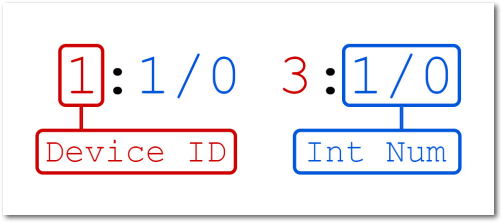
> Much like Packet Tracer, you will be able to move the devices around to better present the topology.
>
> You can turn this off if you have your own diagram, but for this guide simply leave it on.

3. **Additional info** is an optional field.



It serves as another description. Preferably for the goal of the lab, task list, solutions, or any additional information to suplement the activity.

4. **Netmap** is the most important setting as it defines the connections between devices.



There are 2 important components that you need to know.

> **Device ID** - is used by the Cisco IOU-Web to identify each device used on a lab.
>
> The **device ID + 2000** will be the port number that you will use to connect to the device via telnet.
>
> **Interface/port number** - is simply the interface/port number of the device.
>
> ***DO NOT** mistake it as the port that will be used to connect to the device via telnet.

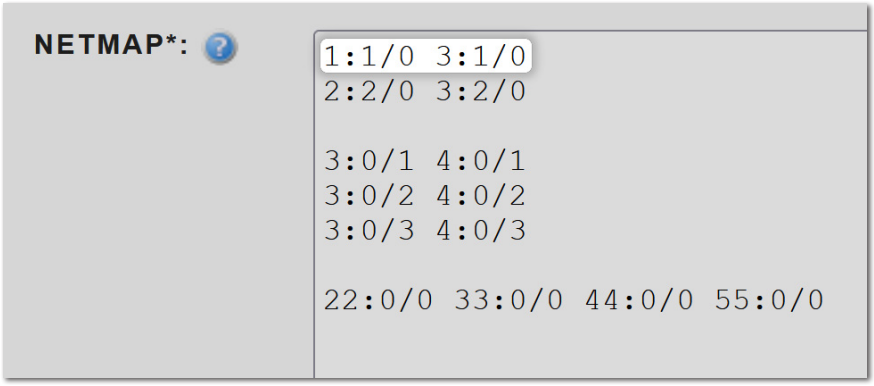
These are the device ID assignments for the topology.

Device ID **1 = R1**

2 = R2

3 = D1

4 = D2

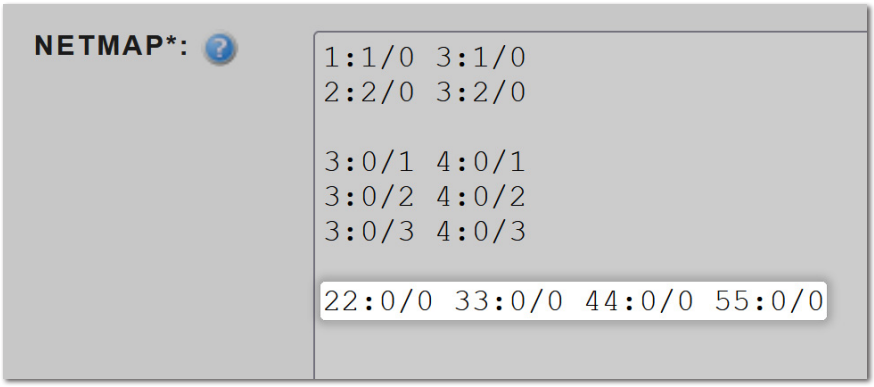


In the above diagram, a connection has been defined between **R1** and **D1**

> **[1 & 3]** are the device IDs of **R1** and **D1** respectively, while **[1/0 & 1/0]** are the interface/port numbers of the respective devices.
>
> This statement tells us that device 1 **[R1]** is connected to device 3 **[D1]** on both of their 1/0 interface.

*Do note, you don't need to make every port match, this is simply designed to make the lab easier to navigate.

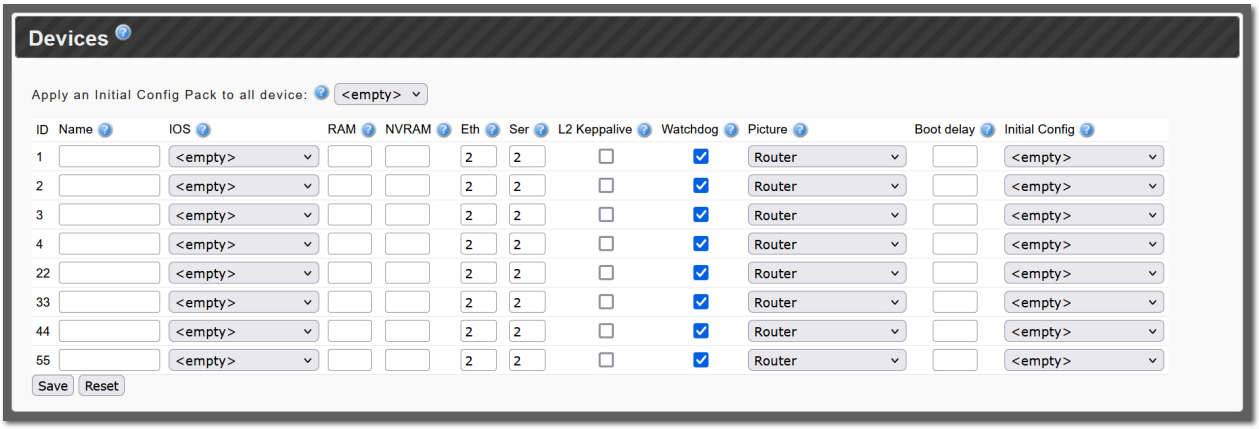
As for the last line, it is only there to show what will happen when more than 2 devices connect on the same line.



TLDR: They will all connect to each other with the specified port number using a hub.

6. Device Settings

After netmapping, a new setting will appear **[Devices]**.



Starting from the left column:

- **ID** - the IOU-Web lists the device ID you've chosen for each device.
- **Name** - the display name of the device. **(R1, R2, D1, D2, etc.)**
- **IOS** - the image that the device will use. Despite multiple options only 2 are usable.
  - > **L2 15.1M**: for L2 or L3 Switches.
  - > **L3 15.3.1.T**: for Routers, PCs, Servers, MPLS.
- **RAM** - safe to just set it to **256.**
- **NVRAM** - safe to just set it to **128.**
- **Eth & Ser -** the number of ethernet and serial ports of a device.
  - > There's only 2 types of ports devices can have: **Ethernet or Serial.**
  - > When the value is set to 1, four ports will be added to the device:
    0/0, 0/1, 0/2, 0/3
  - > When set to 2, it will become:
    0/0, 0/1, 0/2, 0/3
    1/0, 1/1, 1/2, 1/3
  - > This simply means that there are no 0/4+ ports that can be created.
  - > When a value of 1 is set for both **ethernet** and **serial**. The corresponding ports will be created:
    e0/0, e0/1, e0/2, e0/3
    se1/0, se1/1, se1/2, se1/3

***Note -** it is not possible to have the same port number for both ethernet and serial. Ethernet will take priority for the first set/s of port/s, then afterwards the serial port/s will take the next set/s of four.

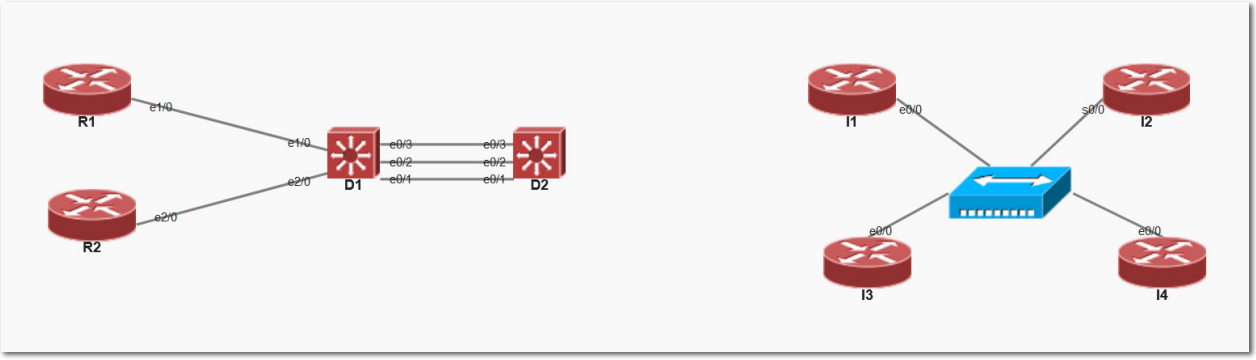
The diagram on the right shows a Router's interfaces with both ethernet and serial set to 2.

```
Router#sh ip int br
Interface
Ethernet0/0
Ethernet0/1
Ethernet0/2
Ethernet0/3
Ethernet1/0
Ethernet1/1
Ethernet1/2
Ethernet1/3
Serial2/0
Serial2/1
Serial2/2
Serial2/3
Serial3/0
Serial3/1
Serial3/2
Serial3/3
```

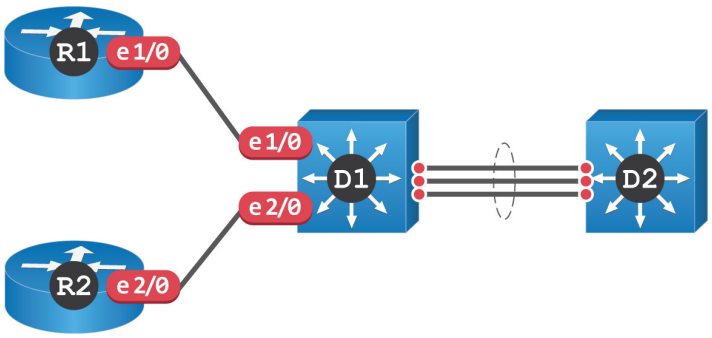
- **L2 Keppalive (Keepalive)** - Enables TCP keep-alive mechanism. Just leave it **off**.
- **Watchdog** - Enables the wachdog timer. Just leave it **on**.
- **Picture** - the image that the device will represent on the diagram.
- **Boot delay** - if your machine cannot handle multiple devices booting up, set a boot delay for each device. Otherwise, **leave it blank**.
- **Initial config** - a config that the device will load with regardless if the user saves and makes any changes to the startup-config. Simply leave it **empty**.

After configurations, simply **Save**. The new lab will be located on the laboratories page. You can relocate it by dragging it around or on to a folder.

7. Topology



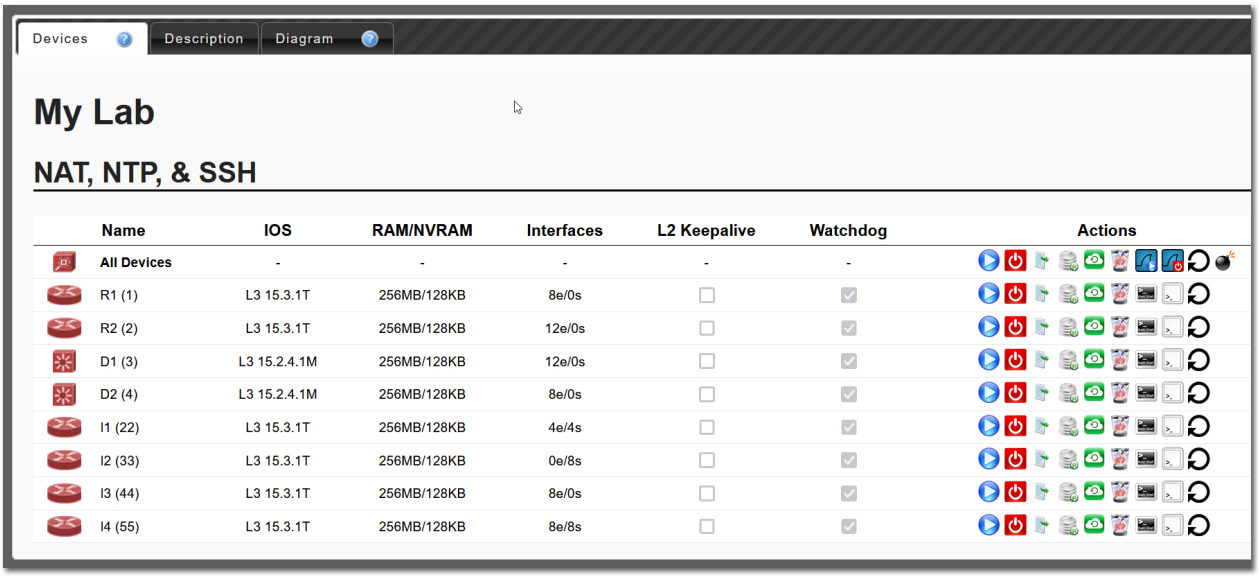
The device on the diagram will be a mess by default. Simply arange them based on the topology. Make sure to **Save**.



Take note of devices **I1, I2, I3, I4.** These are the devices that was configured on the same line. A hub is used to connect them together. The hub is not accessible.

8. Boot devices

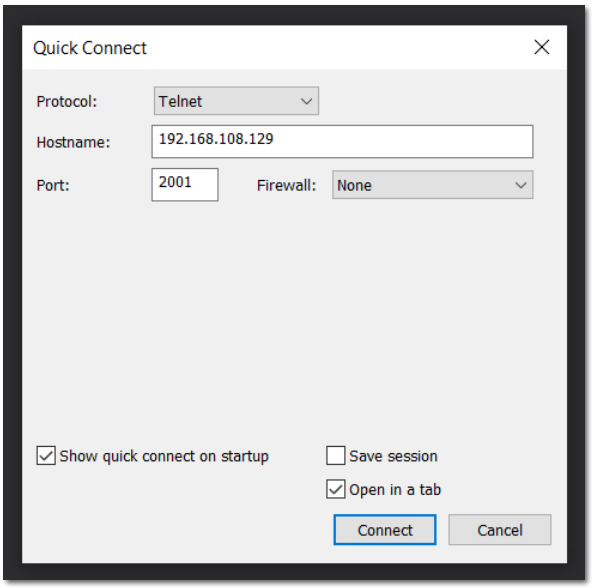
Go to devices page of the lab and click on the Run button to turn on devices. Or run all.



***Note -** The device ID beside the device Name.

Simply add **2000 + device ID** to determine the port number that is needed to telnet to the device.

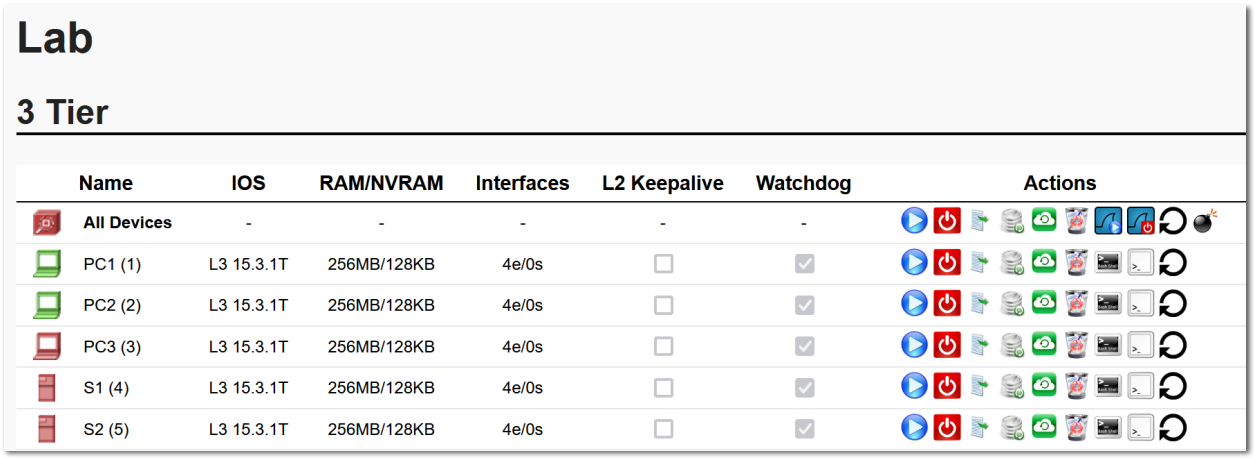
The hostname will be the **IP address of the IOU-Web.**



Once connected to the device, precofigurations can be made such as hostnames and enable secret. Make sure to save configs by excecuting **write memory** or **copy run start**.

The next time the device starts, it will boot with the saved configs.

9. **Known Issues**



***Note -** notice how devices ID **1** & **2** from another lab is turned on. This is the result of using the same device ID for different labs.

- Don't worry about the startup config.
- The configs are separate per lab even though the device ID is the same.
- This just causes devices from other labs unusable for the time being.

It is highly recommend to use different device IDs for each lab to avoid this issue.

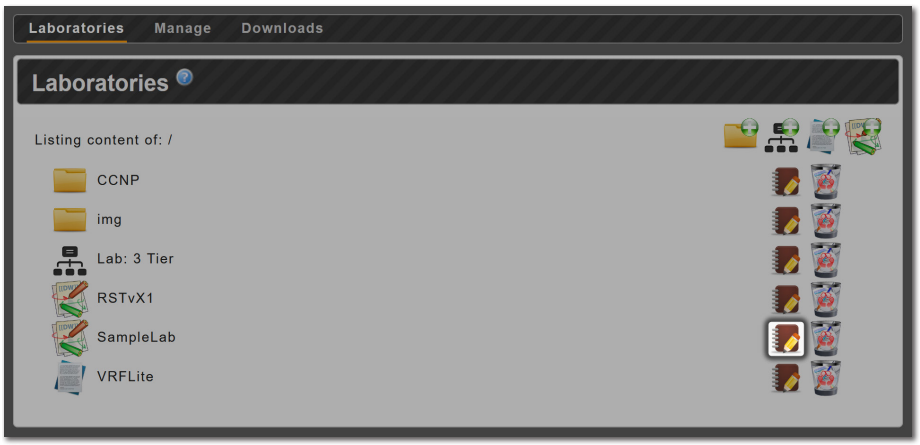
B. Mapping links to an image.

1. Start by selecting the **Add New Image**  Icon

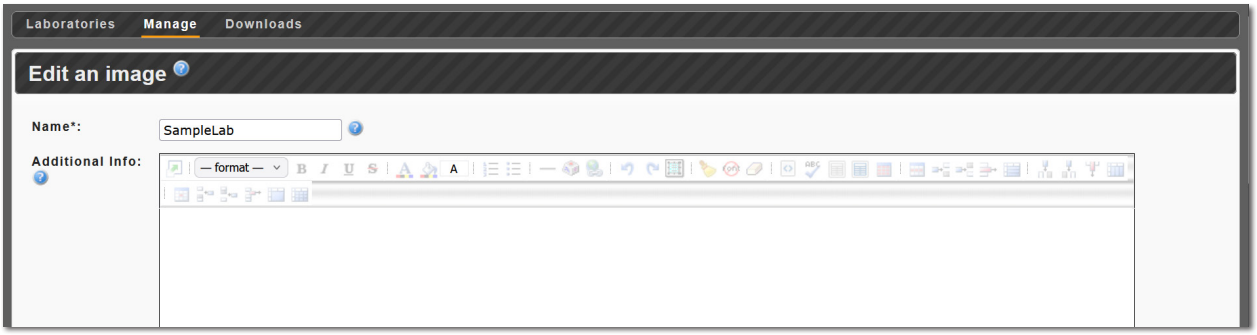
2. Upload the image from **File: Browse**

Then make sure to **Save.**

3. To apply links to the image, select the **Edit this image** icon.



The **Edit an image** page will appear.



Scroll down to the **Map** section

To map out the desired links, use the HTML Shape Attribute.
Ref: https://www.w3schools.com/tags/att_shape.asp

```
<area shape='circle' coords='121,76,40' href='telnet://{{IP}}:2001'>
```

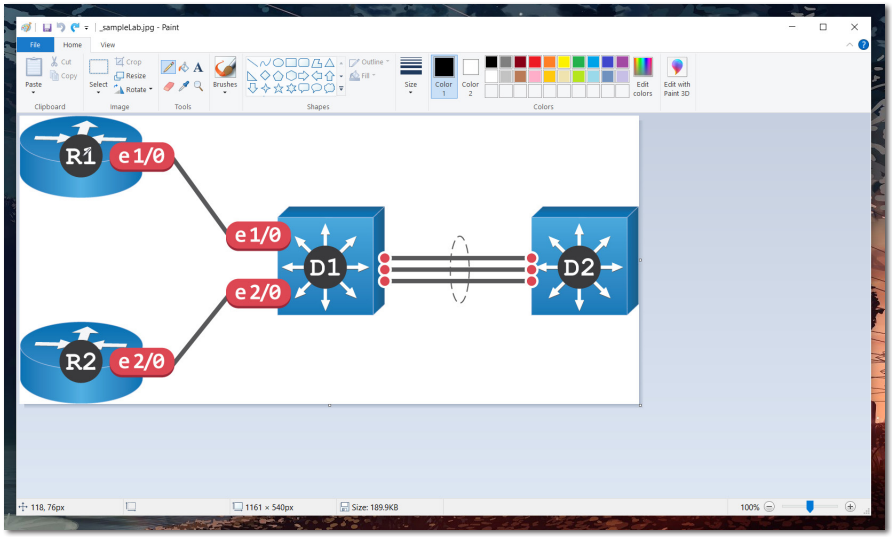
center of circle

radius

port

Before moving forward, it is important to determine the coordinates of the shape that will act as a clickable link.

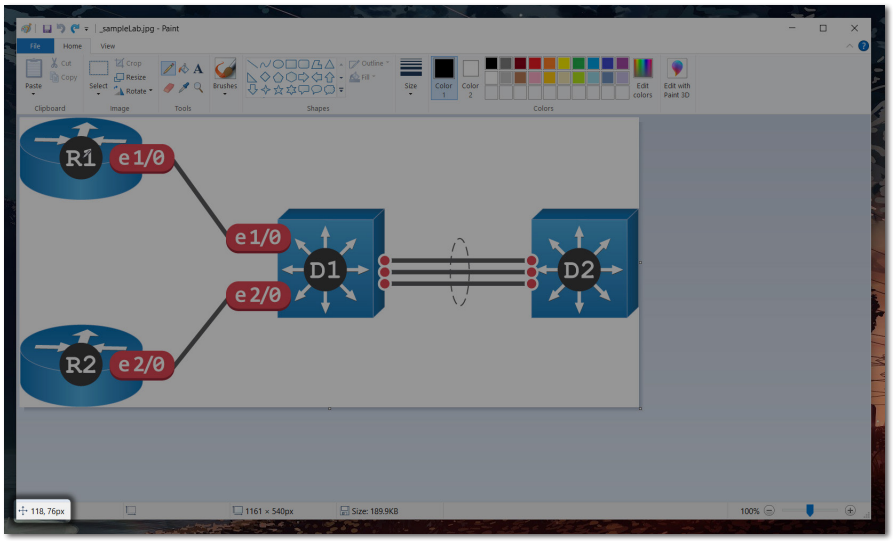
To achieve this, open the image in **paint** 🎨

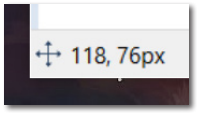


Hover the mouse on the area where the center of the shape will be placed.

*__Note:__ The shape that will be used for this guide is a **Circle**, which means the only coordinates that needs to be obtained is the center of the circle.

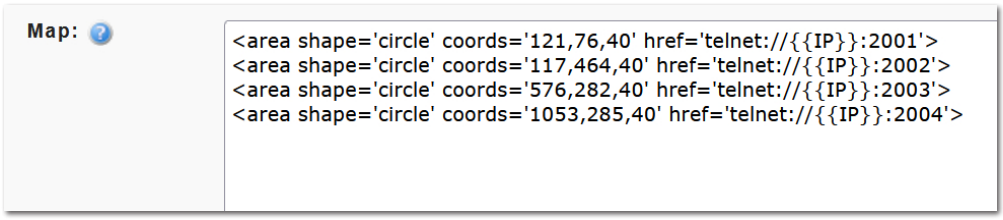
> If you prefer a **Rectangle** in order to cover a larger area, you will need to obtain the coordinates of the **top-left** and **bottom-right** of the rectangle.



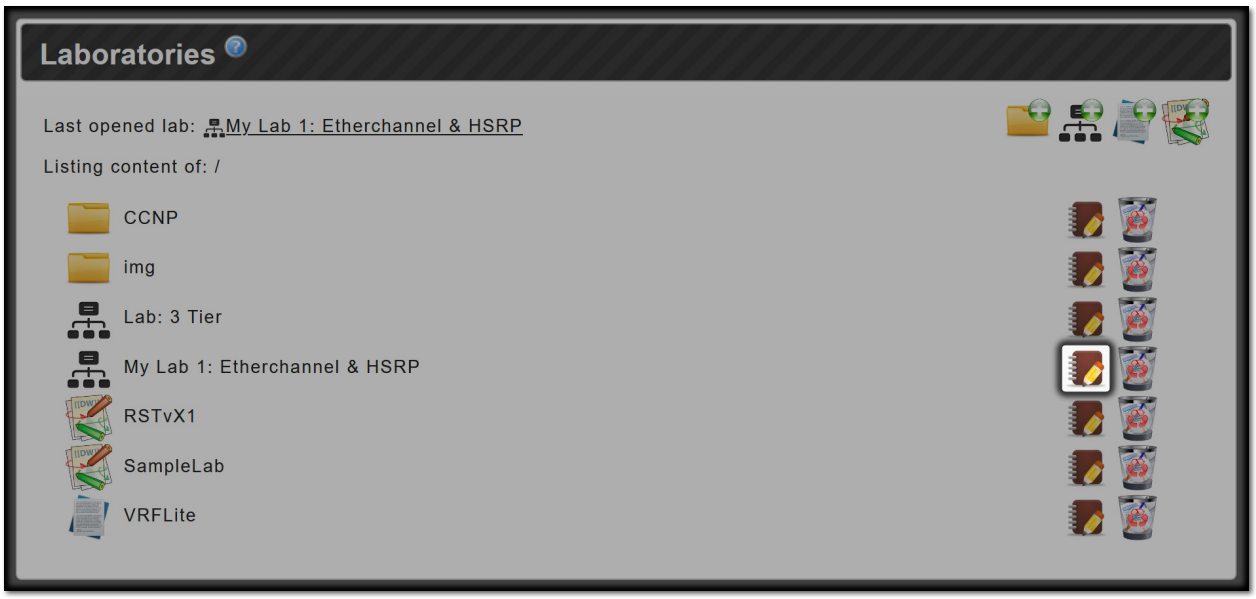


On the **bottom-left** of **paint**, the coordinates of the mouse's location will be displayed. Take note of the coords and apply the process for each device.

4. Return to the IOU-Web, then **apply the image map**. Then, **Save**



5. Finally, to apply the image. Click on the **Edit this lab** icon for the selected lab.



6. Scroll down to the **Images** section, then **select the image** to be attached to the lab.

Finally, click **Save.**

Congrats! You have successfully learned how to created a lab with an image, containing links to each device.

Happy Labbing!