

OpenWrt & Open Wisp Configuration

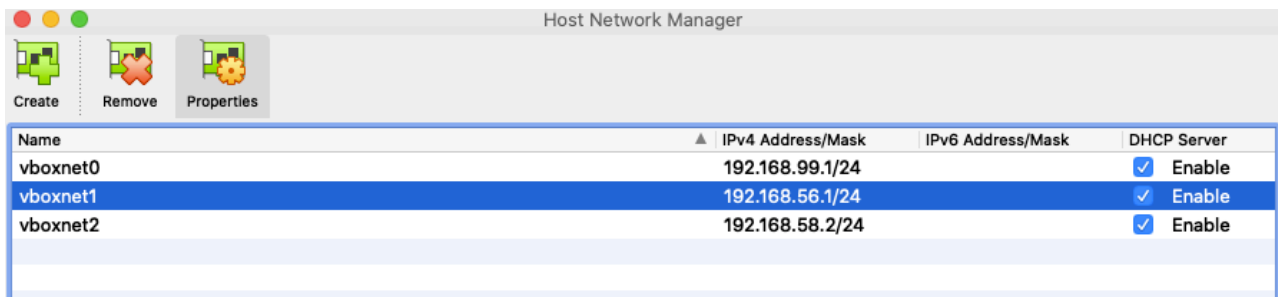
Sunday, April 12, 2020

9:47 AM

- My Understanding of OpenWrt and OpenWisp is that OpenWisp is the centralized controller would be the Device. It will have the Interface (Lan, Wifi) configured but the template will be controller - OpenWisp.
- I will upload the templates, the readme file and possible the images. Finally will export the G project. I have used `openwrt-18.06.1-x86-64-combined-ext4.img` and not

CREATE 3 .VDI FILES FOR AP1, AP2 AND WIRELESS CONTROLLER

- ACCESS POINT 1
- `VBoxManage convertfromraw --format VDI openwrt-18.06.1-x86-64-combined-ext4-image.vdi`
- ACCCES POINT 2
- `VBoxManage convertfromraw --format VDI openwrt-18.06.1-x86-64-combined-ext4-image2.vdi`
- WIRELESS CONTROLLER
- `VBoxManage convertfromraw --format VDI openwrt-18.06.1-x86-64-combined-ext4-image3.vdi`
- `ssh root@192.168.56.56 -o UserKnownHostsFile=/dev/null` : this commands helps if you change the ip configuration and try to login again
- This Configuration is the first step in making setup work. I am using all the wireless device on vboxnet1 has been configured in the Virtualbox for the same.



Name	IPv4 Address/Mask	IPv6 Address/Mask	DHCP Server
vboxnet0	192.168.99.1/24		<input checked="" type="checkbox"/> Enable
vboxnet1	192.168.56.1/24		<input checked="" type="checkbox"/> Enable
vboxnet2	192.168.58.2/24		<input checked="" type="checkbox"/> Enable

and OpenWrt instance
e pushed by the centralized

NS3 file as the portable

```
openwrt-19.
```

```
-combined-ext4.img
```

```
-combined-ext4.img
```

```
-combined-ext4.img
```

to clear the ssh keys

network 192.168.56.1/24.

Adapter DHCP Server

☐ Configure Adapter Automatically

☒ Configure Adapter Manually

IPv4 Address: 192.168.56.1

IPv4 Network Mask: 255.255.255.0

IPv6 Address:

IPv6 Prefix Length: 0

Reset Apply Close

Step 1: OpenWisp2 Configuration:

Configured the VM as per the Instructions in document using the "vnet0" adapter using vnet0. Try out the templates and sample device configuration suggested. The device setup is just for our understand as to how it is configured with templates but normally that will be done through OpenWisp2 manually.

- Ansible with Windows is PAIN. So I am using Mac for my setup. But to overcome this by manually running the OpenWisp VM without Vagrant.
- I am using VirtualBox: `vagrant up`. Change the provider as per your requirements supported but the image which comes with the debian image in Vagrant does not support HyperV. Changing the VagrantFile to a more appropriate provider to make it work on HyperV.
- Once the service is up then you can see the

URL: <https://192.168.56.5>

- Username: admin, Password: admin

OpenWisp2

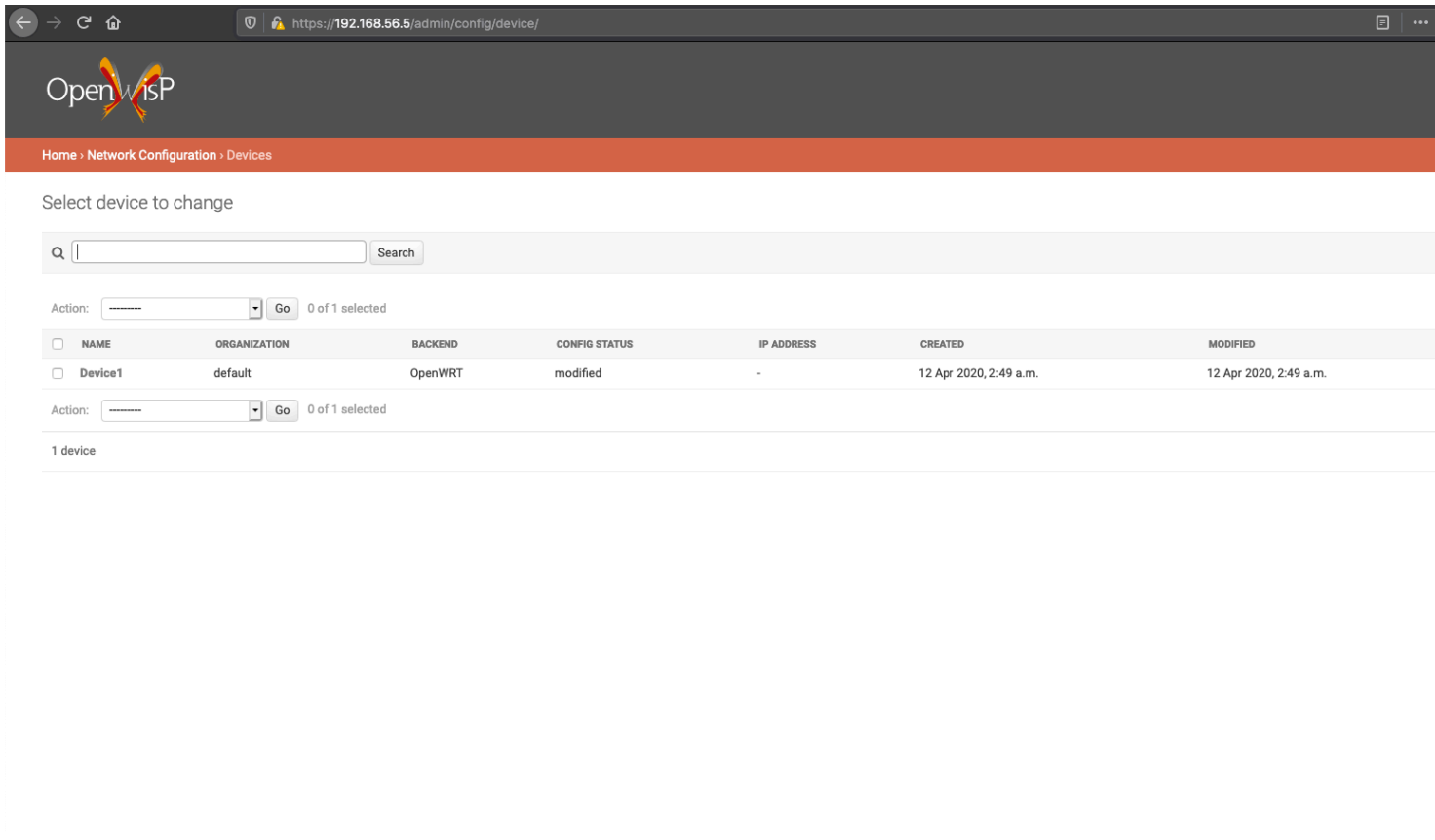
Home > Network Configuration > Devices

Select device to change

Search

Action: Go 0 of 1 selected

- Username: admin, Password: admin



SSH Key I created has also been uploaded to GitLab:

```
-rwxrwxrwx  1 kalathilmenon  staff      422 Apr 11 21:38
cs498_iot_lab3_key.pub
-rwxrwxrwx  1 kalathilmenon  staff     1896 Apr 11 21:38
cs498_iot_lab3_key
```

Passphrase: cs498iotlab3

Step 2: OpenWrt Configuration (Replicate this for multiple devices to be created)

- Note: I am using the openwrt-18.06.1-x86-64-combined-ext4 version and not the 19th Version. I feel it has issues. I was not able to get the Internet working from within with the 19th Version.
 - Create multiple copies of the .vdi or .vmdk file so that you can simulate

RECOVER DELETED DEVICES

ADD DEVICE +

FILTER

By backend

All

OpenWRT

OpenWISP Firmware 1.x

By templates

All

Lab3_Timezone

Lab3_SSH

Lab3_2GHz_WIFI_AP

-

By configuration status

All

modified

applied

error

By created

Any date

Today

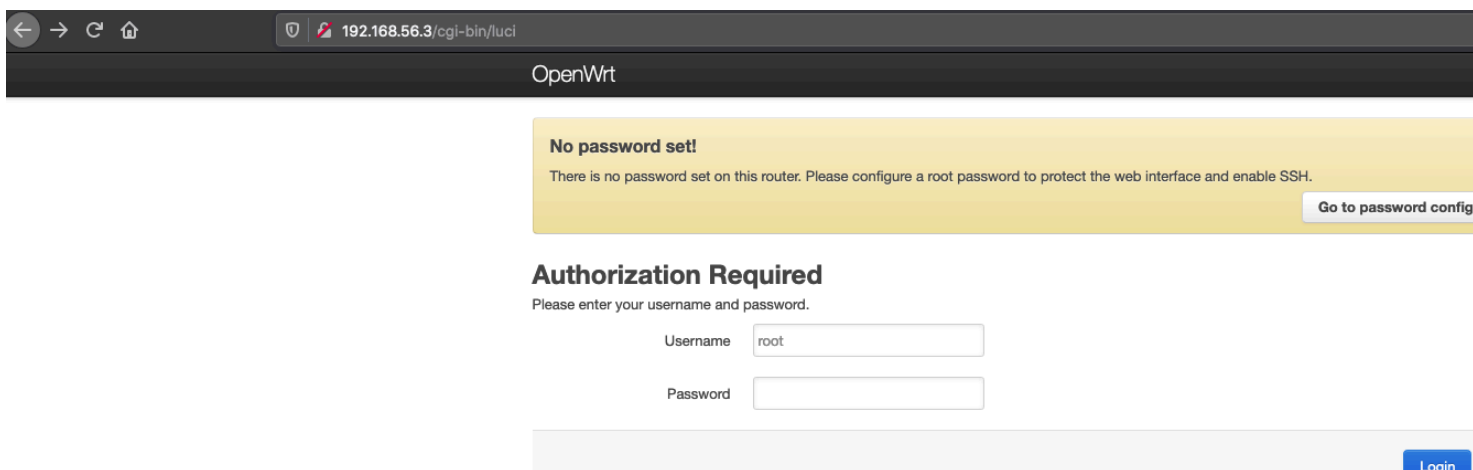
Past 7 days

This month

This year

different devices.

- Read this documents end to end to understand the network setup:
 - Link1 : <http://openwisp.io/docs/user/configure-device.html#install-openwrt-on-virtualbox>
 - Link 2: <https://openwrt.org/docs/guide-user/virtualization/virtualbox-vm> (link in above url as well)
- Once you have downloaded and set the OpenWrt in your VirtualBox, go first to your File --> Host Network Manager to understand how your vboxnet0, vboxnet1 ... is configured.
- I am using vboxnet1 since its configured with 192.168.56.1 range of Ip address. Its DHCP enabled as well.
- As mentioned Link 2: Follow the network setup process and set the order of network adapters as follows
 - Adapter 1: Host Only Network with vboxnet1 and adapter type : Intel PRO/1000 MT ...
 - Adapter 2: NAT and adapter type : Intel PRO/1000 MT ...
 - Adapter 3: Bridged adapter to you eno: Ethernet
 - Adapter 4: Bridged adapter to you en1: Wi-Fi
- Start your VM and check the configuration: ifconfig | more
 - Default would be 192.168.1.1. Change that as per Link 2 or change in vim /etc/config/network
 - I set 192.168.56.3 and was able to ssh root@192.168.56.3.
 - 192.168.56.2 was not working for me. I think it was conflicting somewhere.
- 192.168.56.3 – I am able to the below LuCI webpage. Password is not required to login but I think needs to be set going forward from here.



OpenWrt

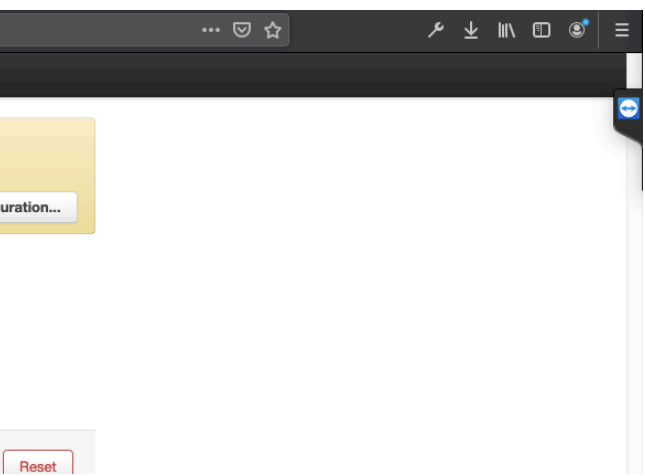
No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. [Go to password config](#)

Authorization Required
Please enter your username and password.

Username

Password

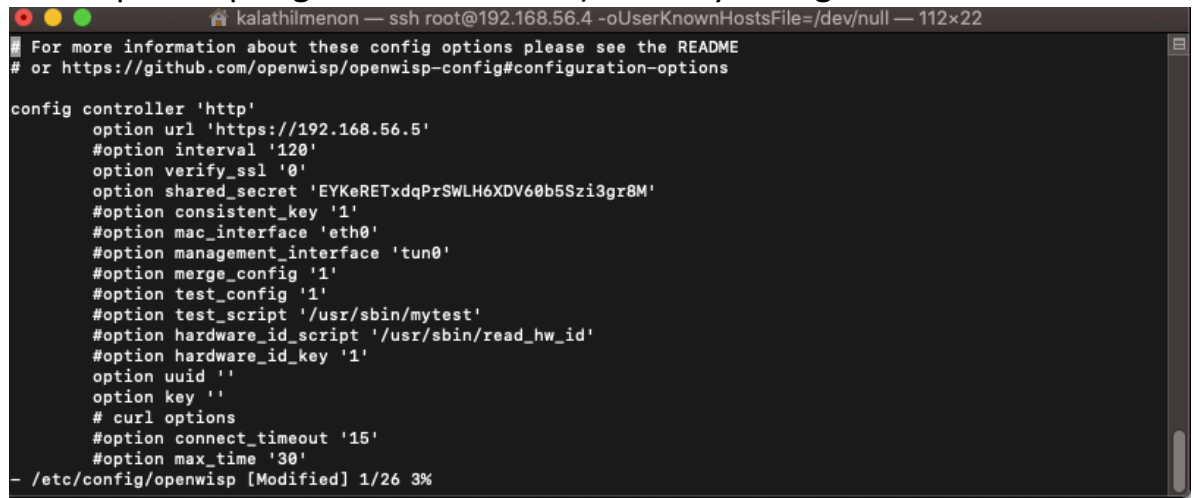
[Login](#)



Connecting OpenWrt to OpenWisp requires openwisp to be installed on openwrt:

- Follow the link to correctly install, configure and restart openwrt with openwisp.
 - opkg update and opkg install http://downloads.openwisp.io/openwisp-config/latest/openwisp-config-openssl_0.4.6a-1_all.ipk : commands help to install openwisp on openwrt instance

- Then we do this step to get the openwrt get registered on the controller (openwisp). Not the url, verify_ssl and the shared_secret (need to get this from openwisp organization section) are only changed.

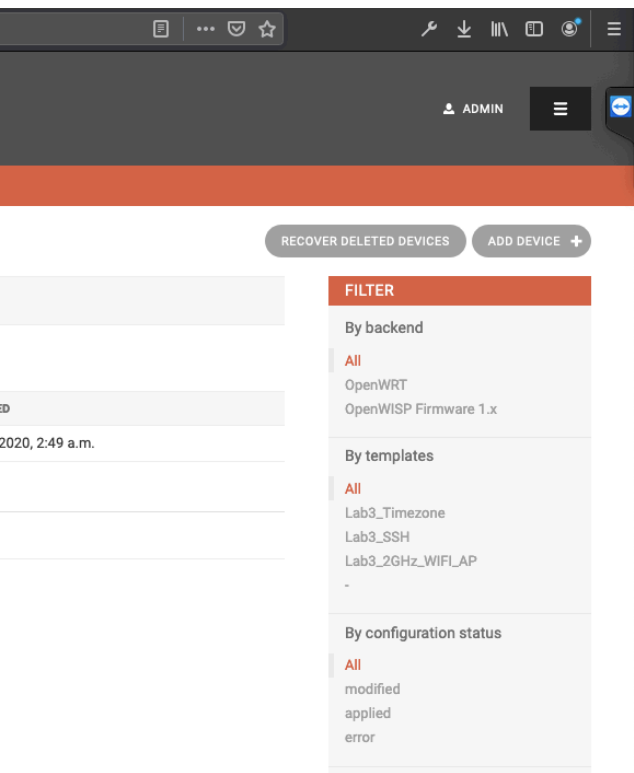


```

# For more information about these config options please see the README
# or https://github.com/openwisp/openwisp-config#configuration-options

config controller 'http'
    option url 'https://192.168.56.5'
    #option interval '120'
    option verify_ssl '0'
    option shared_secret 'EYKeRETxdqPrSWLH6XDV60b5Szi3gr8M'
    #option consistent_key '1'
    #option mac_interface 'eth0'
    #option management_interface 'tun0'
    #option merge_config '1'
    #option test_config '1'
    #option test_script '/usr/sbin/mytest'
    #option hardware_id_script '/usr/sbin/read_hw_id'
    #option hardware_id_key '1'
    option uuid ''
    option key ''
    # curl options
    #option connect_timeout '15'
    #option max_time '30'
- /etc/config/openwisp [Modified] 1/26 3%
    
```

-
- /etc/init.d/openwisp_config start
 - Agent should get started after this.
 - Notice that the openwisp_config will be overridden by the controller as soon as you are connected successfully. Also a host name would be assigned.
 -



On successful connection you will see the hostname change automatically as well to something like : 08-00-27-EF-F5-37 from a previous

192.168.56.3/cgi-bin/luci/admin/system/system

08-00-27-EF-F5-37StatusSystemNetworkLogout

No password set!

There is no password set on this router. Please configure a root password to protect the v

System

Here you can configure the basic aspects of your device like its hostname or the timezone.

System Properties

General SettingsLoggingLanguage and Style

Local TimeSun Apr 12 15:50:06 2020Sync with browser

Hostname08-00-27-EF-F5-37

TimezoneUTC

Time Synchronization

Enable NTP client☒

Provide NTP server☐

NTP server candidates

0.openwrt.pool.ntp.org	x
1.openwrt.pool.ntp.org	x
2.openwrt.pool.ntp.org	x

```
Sun Apr 12 15:38:37 2020 daemon.  
for domain invalid  
Sun Apr 12 15:38:37 2020 daemon.  
for domain bind  
Sun Apr 12 15:38:37 2020 daemon.  
for domain lan  
Sun Apr 12 15:38:37 2020 daemon.  
254#53  
Sun Apr 12 15:38:37 2020 daemon.  
es  
Sun Apr 12 15:38:37 2020 daemon.  
11c - 0 addresses  
Sun Apr 12 15:38:37 2020 daemon.  
q1 - 0 addresses  
Sun Apr 12 15:38:37 2020 daemon.  
es  
Sun Apr 12 15:38:37 2020 daemon.  
11c - 0 addresses  
Sun Apr 12 15:38:37 2020 daemon.  
q1 - 0 addresses  
cs498-iot-l  
eth0 Link encap:Ethernet HW  
UP BROADCAST RUNNING MU  
RX packets:10390 errors:  
TX packets:8701 errors:  
collisions:0 txqueuelen  
RX bytes:1176716 (1.1 M  
eth1 Link encap:Ethernet HW  
inet addr:10.0.3.15 Bc  
inet6 addr: fe80::a00:2  
UP BROADCAST RUNNING MU  
RX packets:1109 errors:  
TX packets:765 errors:0  
collisions:0 txqueuelen  
RX bytes:674676 (658.8  
lo Link encap:Local Loopba  
inet addr:127.0.0.1 Ma  
inet6 addr: ::1/128 Sco  
UP LOOPBACK RUNNING MT  
RX packets:3862 errors:  
TX packets:3862 errors:  
collisions:0 txqueuelen  
RX bytes:268873 (262.5  
root@08-00-27-EF-F5-37:~# logread
```

By created

Any date

Today

Past 7 days

This month

This year


```
120% ... ☆ ⚙ ⬇ 🔍 📄 🔄 ☰
OpenWRT-18 [Running]
info dnsmasq[12068]: using local addresses only
info dnsmasq[12068]: using local addresses only
info dnsmasq[12068]: using local addresses only
info dnsmasq[12068]: using nameserver 192.168.1.
info dnsmasq[12068]: read /etc/hosts - 4 address
info dnsmasq[12068]: read /tmp/hosts/dhcp.cfg014
info dnsmasq[12068]: read /tmp/hosts/dhcp.dnsmas
info dnsmasq[12068]: read /etc/hosts - 4 address
info dnsmasq[12068]: read /tmp/hosts/dhcp.cfg014
info dnsmasq[12068]: read /tmp/hosts/dhcp.dnsmas
ab3 — ssh root@192.168.56.3 — 81x27
vaddr 08:00:27:EF:F5:37
MULTICAST MTU:1500 Metric:1
:0 dropped:0 overruns:0 frame:0
:0 dropped:0 overruns:0 carrier:0
:1000
KiB) TX bytes:2284826 (2.1 MiB)

vaddr 08:00:27:FC:D9:F8
ast:10.0.3.255 Mask:255.255.255.0
7ff:feff:d9f8/64 Scope:Link
MULTICAST MTU:1500 Metric:1
:0 dropped:0 overruns:0 frame:0
:0 dropped:0 overruns:0 carrier:0
:1000
KiB) TX bytes:57689 (56.3 KiB)


ack
sk:255.0.0.0
pe:Host
U:65536 Metric:1
:0 dropped:0 overruns:0 frame:0
:0 dropped:0 overruns:0 carrier:0
:1000
KiB) TX bytes:268873 (262.5 KiB)

-f
```

Finally the Controller will have the devices registered like these with multiple OpenWrt VM's running.

 OpenWISP

Home » Network Configuration » Devices

 The device "Lab3-WirelessController" was changed successfully.

Select device to change

Q Search

Action: 0 of 3 selected

<input type="checkbox"/>	NAME	ORGANIZATION	BACKEND	CONFIG STATUS	IP ADDRESS	CREATED
<input type="checkbox"/>	Lab3-AccessPoint-2	default	OpenWRT	applied	192.168.56.4	12 Apr 2020, 6:20 p.m.
<input type="checkbox"/>	Lab3-WirelessController	default	OpenWRT	modified	192.168.56.56	12 Apr 2020, 7:25 p.m.
<input type="checkbox"/>	Lab3-AccessPoint-1	default	OpenWRT	applied	192.168.56.3	12 Apr 2020, 3:38 p.m.

Action: 0 of 3 selected

3 devices

Floor Plan for the Geographic Location of the Device:

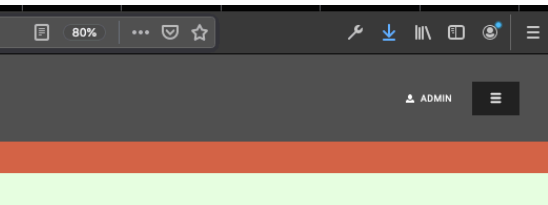
Geometry:

INDOOR COORDINATES

Floorplan: Walmart 1st floor

Floor: 1

Currently: floorplans/8b5a3b1e-d508-49ac-b11b-41176a5fedb.png



RECOVER DELETED DEVICES

ADD DEVICE +

FILTER

By backend

All

OpenWRT

OpenWISP Firmware 1.x

By templates

All

Lab3_Timezone

Lab3_SSH

Lab3_2Ghz_WIFI_AP

Lab3_2Ghz_Wifi_Controller

-

By configuration status

All

modified

applied

error

By created

Any date

Today

Past 7 days

This month

This year

