Mesh network with OpenWRT routers.

After loading the appropriate firmware in our router via the web interface we connect to it with ssh. (Connect an ethernet cable to your pc and in one of the yellow ports of the Router)

ssh root@192.168.1.1
#password=1234

#Check the wireless interfaces
iwconfig
root@OpenWrt:~# iwconfig

lo   no wireless extensions.

wlan1   IEEE 802.11abgn ESSID:off/any
*   Mode:Managed Access Point: Not-Associated   Tx-Power=0 dBm*
*   RTS thr:off   Fragment thr:off*
*   Encryption key:off*
*   Power Management:off*

eth1   no wireless extensions.

wlan0   IEEE 802.11bgn ESSID:off/any
*   Mode:Managed Access Point: Not-Associated   Tx-Power=0 dBm*
*   RTS thr:off   Fragment thr:off*
*   Encryption key:off*
*   Power Management:off*

eth0   no wireless extensions.

#Then we edit the configuration for networking

vi /etc/config/network

#Press i in order to write to the file and we add the following for bridging wireless interfaces:

config interface 'wifi'

*   option ifname 'wlan0'*

option type 'bridge'

option proto 'static'

option ipaddr '192.168.2.2'

option netmask '255.255.255.0'

#We press esc and then :wq in order to save the changes

#Then we edit the configuration for wireless interfaces:

vi /etc/config/wireless

#In case of having a router with two interfaces the configuration file should change to:

config wifi-device radio0

option type   mac80211

option channel 1   #This is the channel that the clients will operate

option hwmode   11ng

option path   'platform/qca955x_wmac'

list ht_capab   LDPC

list ht_capab   SHORT-GI-20

list ht_capab   SHORT-GI-40

list ht_capab   TX-STBC

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        list ht_capab   RX-STBC1

        list ht_capab   DSSS_CCK-40

        option htmode   HT20

        # REMOVE THIS LINE TO ENABLE WIFI:

        #option disabled 1




config wifi-iface

        option device   radio0

        option network  wifi       #where wifi is the name that we assigned in the previous file

        option mode    ap

        option ssid     OpenWrtNG   #Change the name to whatever you want

        option encryption none



config wifi-device  radio1

        option type     mac80211
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        option channel  11      #this channel should be the same for all the routers that will
participate in the mesh network

        option hwmode   11ng

        option path      'pci0000:01/0000:01:00.0'

        list ht_capab   LDPC

        list ht_capab   SHORT-GI-20

        list ht_capab   SHORT-GI-40

        list ht_capab   TX-STBC

        list ht_capab   RX-STBC1

        list ht_capab   DSSS_CCK-40

        option htmode   HT20

        # REMOVE THIS LINE TO ENABLE WIFI:

        #option disabled 1


config wifi-iface

        option device   radio1

        option network  wifi

        option mode    mesh

        option mesh_id  openmesh    #You can change it to whatever you want but it must be
the same for every Router participating in the mesh
```

option encryption none

#In this file we can configure multiple options like the operating channel, the wireless protocol, the SSID etc.

#For our purpose it is important to configure one interface as an ap:

[option mode   ap]

#and the other one as a mesh point connected to the appropriate mesh network:

[option mode   mesh]

[option mesh_id openmesh]

#Finally we configure both interfaces to belong to the bridge network we created previously

[option network wifi]

#After saving the configurations we reboot the router:

reboot

This way we have two APs operating in different channels but they are also part of a wider mesh network, allowing communication between STAs connected to different APs

iw wlan0 interface add mesh0 type mesh

ifconfig mesh0 up

iw mesh0 join volosmesh