

## Working with Wi-Fi on Donyx Routers

The configuration of the Wi-Fi interface on the router involves several steps. In **Access Point (AP)** mode, this includes network creation and its subsequent integration with a network bridge. In **Station (STA)** mode, it implies network creation followed by network interface configuration.

### Adapter Configuration

The Wi-Fi adapter configuration is performed in the `/wireless/adapter` section. For routers equipped with two Wi-Fi adapters, each module is configured independently.

The screenshot shows the configuration page for the radio0 interface. The settings are as follows:

- Disabled:** A checkbox that is currently unchecked, with a tooltip that says "Disable configuration".
- Country:** A dropdown menu set to "CN", with a tooltip that says "Selecting a country to apply regulatory restrictions".
- Channels:** A dropdown menu set to "...select one or more...", with a tooltip that says "List of wireless adapter channels". Below this are three buttons labeled "1", "2", and "3", each with a minus sign icon.
- Transmit Power:** A dropdown menu set to "20", with a tooltip that says "Transmit power level".
- HT Mode:** A dropdown menu set to "none", with a tooltip that says "High Throughput (HT) mode".
- Fragment Threshold:** A text input field containing "2346", with a tooltip that says "The size (bytes) of a packet, above which it is fragmented. Even number".
- RTS Threshold:** A text input field containing "2347", with a tooltip that says "The size (bytes) of a packet, above which the RTS/CTS mechanism is activated".
- Beacon:** A text input field containing "100", with a tooltip that says "AP beacon transmission interval (msec)".

Figure 1. Adapter Configuration



The maximum number of Wi-Fi networks (AP/STA) that can be created on a single adapter depends on the router series:

- X Series: up to 8
- S Series: up to 4
- M Series: up to 16

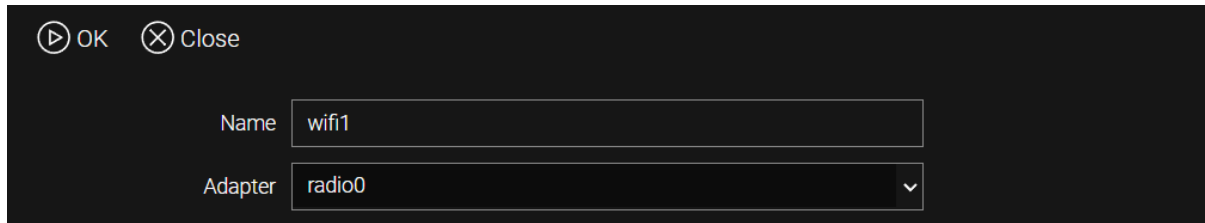
Table 1. Adapter Parameters

Field	Description
Disabled	Enables or disables the adapter.
Country	The region defining the list of permitted channels.
Channels	Channel selection: <ul style="list-style-type: none"><li>• <b>none selected</b> — search across all available channels.</li><li>• <b>single value selected</b> — no search is performed; the specified channel is used.</li><li>• <b>multiple values selected</b> — search is performed only among the specified channels.</li></ul>

Apply the settings by clicking the **Apply** button.

## Access Point Configuration

1. Navigate to the `/wireless/network` section and click **Add**. In the displayed form, specify the system name, select the adapter (e.g., `radio0`), and click **OK**.



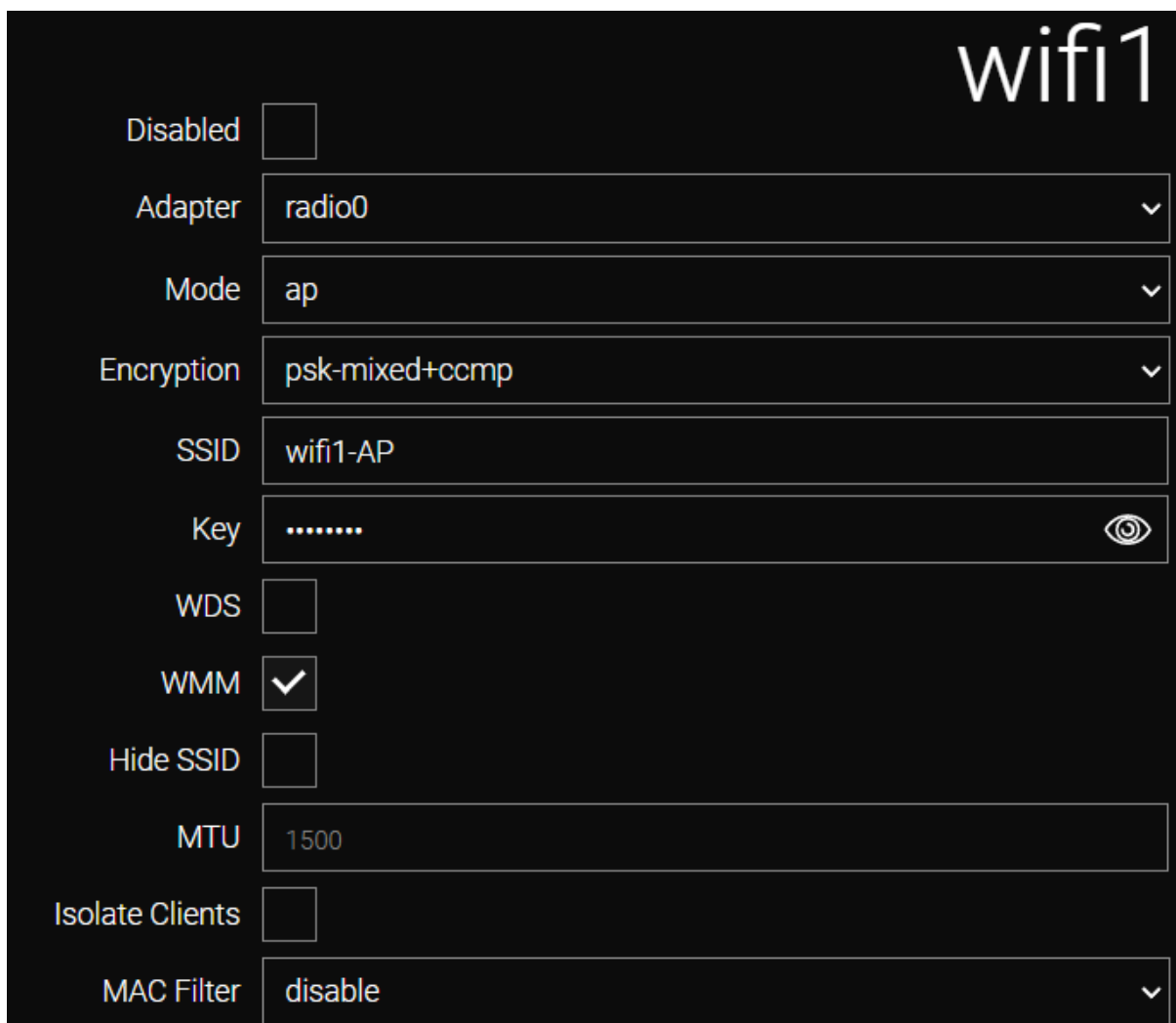
OK Close

Name

Adapter

Figure 2. Name and radio module selection

2. Configure the network parameters in the subsequent menu:



wifi1


Disabled

Adapter

Mode

Encryption

SSID

Key  

WDS

WMM

Hide SSID

MTU

Isolate Clients

MAC Filter

Figure 3. Network configuration in psk-mixed+ccmp mode

The image shows a configuration interface with two main sections:

- Authentication Server:** A text input field with a placeholder "Authentication server address". Below it, the text "Authentication server address" is displayed in red, followed by "value required". An "example:" section lists "192.168.1.1", "example.com", and "192.168.1.1:80".
- Authentication Secret:** A text input field with a placeholder "Authentication server shared key". Below it, the text "Authentication server shared key" is displayed in red, followed by "value required".

Figure 4. Additional fields for wpa-mixed-ccmp

- Set **Mode** to *AP*.
- In the **Encryption** list, select *None* for open networks, *psk-mixed+ccmp* for standard networks with a shared key, or *wpa-mixed-ccmp* for enterprise-level security.
- Enter the network identifier in the **SSID** field.
- For *psk-mixed+ccmp*, enter the network key in the **Key** field.
- For *wpa-mixed-ccmp*, specify the RADIUS server address in the **Authentication server** field and the shared encryption key in the **Authentication secret** field.
- Other parameters may remain at their default values.

Table 2. Network Parameters

Field	Value
Adapter	Physical adapter ( <i>radio0</i> is used for single-adapter configurations).
Mode	Operating mode: <i>ap</i> (Access Point) or <i>sta</i> (Station).
Encryption	Security and encryption settings: <i>None</i> (no security), <i>psk-mixed+ccmp</i> (standard security with a shared key), or <i>wpa-mixed-ccmp</i> (security with a RADIUS authentication server).
SSID	Wireless network identifier.
Key	Network key (password), applicable only to <i>psk-mixed+ccmp</i> .
WDS	Enables Ethernet Bridging.
WMM	Enables Wireless Multimedia QoS for multimedia traffic.
Hide SSID	Hides the network identifier.
MTU	Maximum frame size for the network.
Isolate Clients	Isolates wireless clients from one another (recommended for public networks).

Table 2. Network Parameters

MAC Filter	Enables MAC address filtering: <i>allow</i> (allowlist), <i>deny</i> (denylist), or <i>disable</i> (filtering off).
Authentication server	RADIUS server address (applicable only to <i>wpa-mixed-ccmp</i> ).
Authentication secret	Shared encryption key for the RADIUS server (applicable only to <i>wpa-mixed-ccmp</i> ).

3. In the `/network/bridge` section, select the required bridge. In its settings, add the `wifi1` interface to the **Port** list and click **Apply**.

The screenshot shows the configuration page for a bridge named 'bridge0'. The settings are as follows:

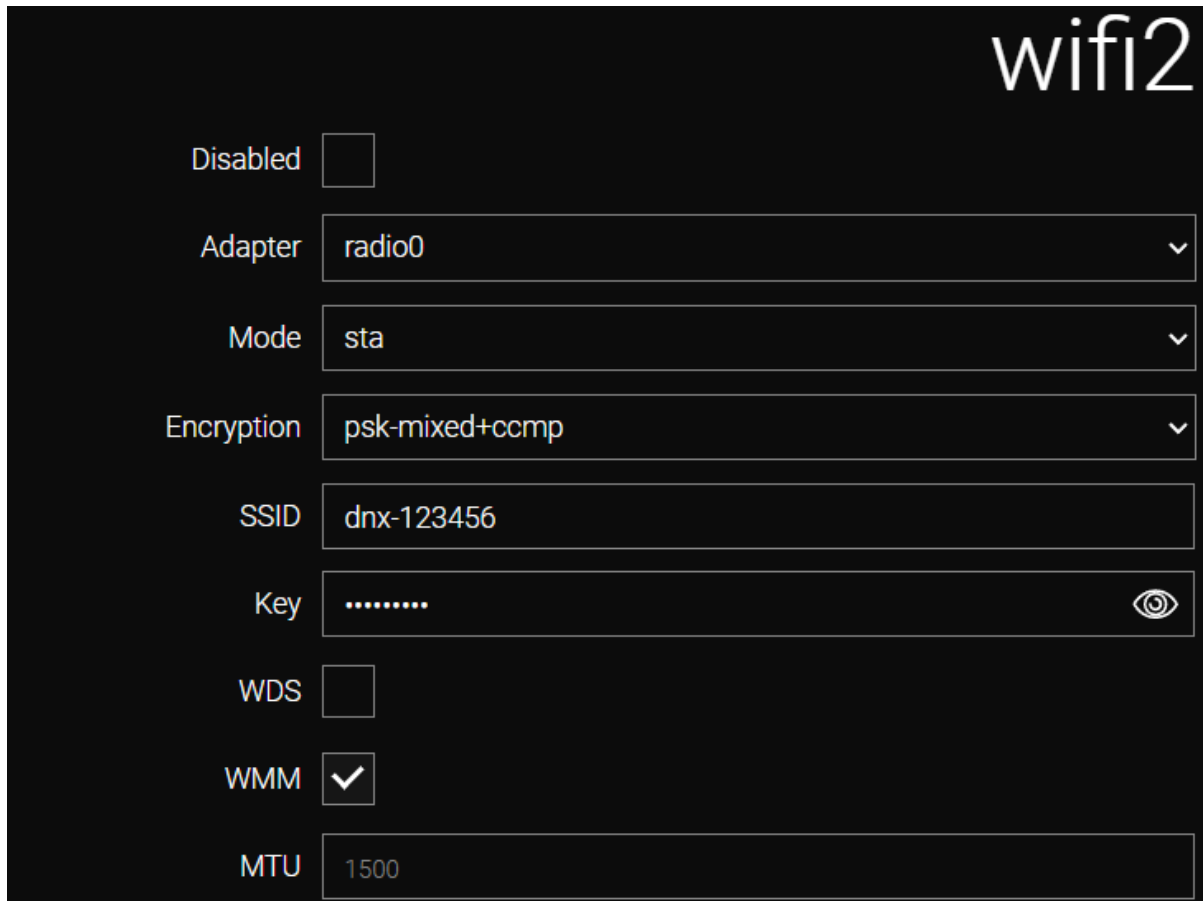
- Disabled:**
- MAC:** f0:81:af:04:98:aa
- TX Queue:** 1000
- Port:** ...select one or more... (dropdown menu)
- Port Selection Buttons:** port1, port3, wifi1 (each with a minus sign icon)
- IGMP Snooping:**
- STP Version:** none (dropdown menu)

Figure 5. Bridging the wireless network with the local network

## Connecting to a Wireless Network

1. Navigate to the `/wireless/network` section and click **Add**. In the displayed form, specify the system name (e.g., `wifi2`) and select the hardware module in the **Adapter** field.
2. Configure the network parameters in the displayed menu.

### psk-mixed+ccmp mode



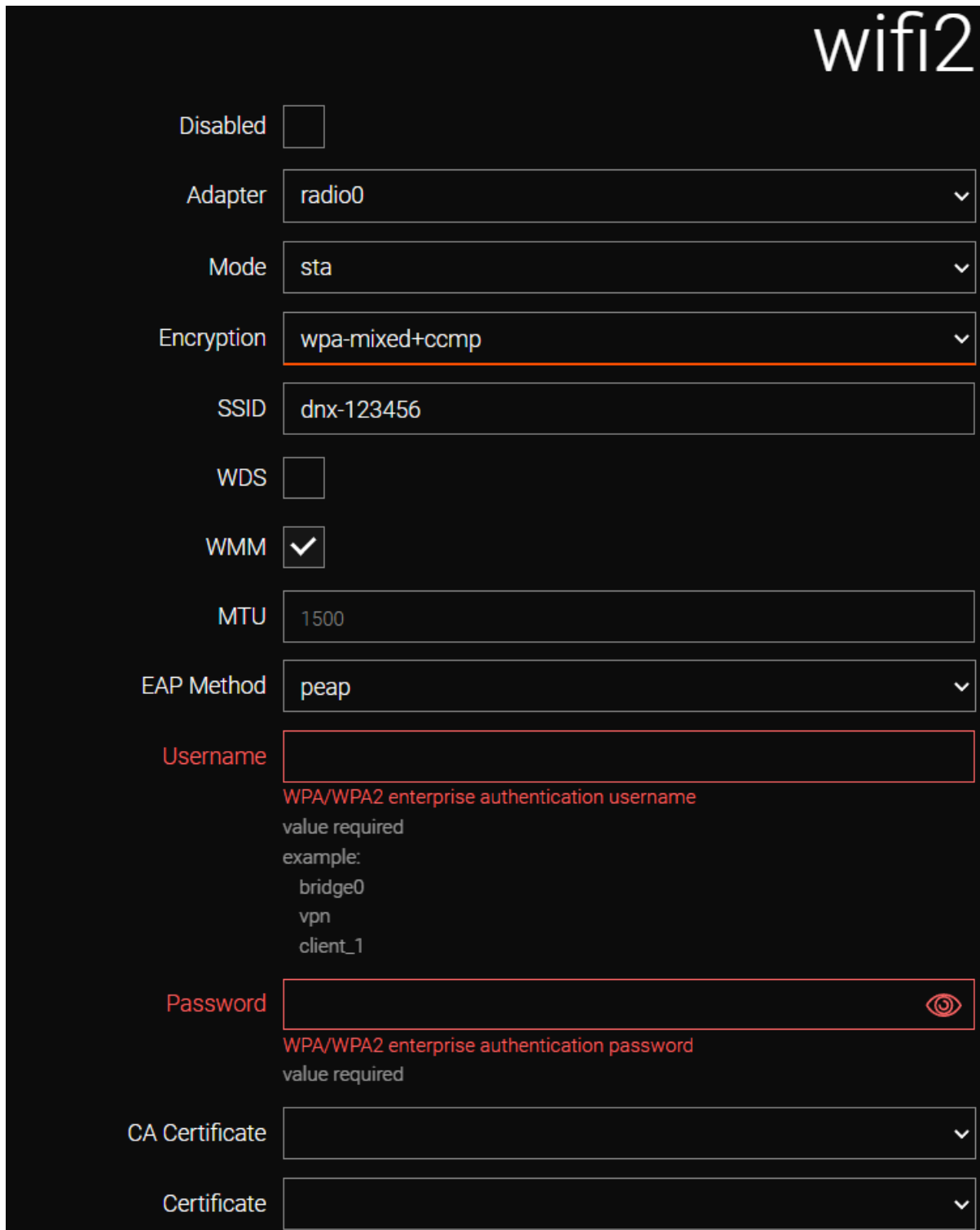
The screenshot shows a configuration form for a wireless network named 'wifi2'. The form includes the following fields and options:

- Disabled:**
- Adapter:** radio0 (dropdown menu)
- Mode:** sta (dropdown menu)
- Encryption:** psk-mixed+ccmp (dropdown menu)
- SSID:** dnx-123456 (text input)
- Key:** ..... (password field with an eye icon for visibility toggle)
- WDS:**
- WMM:**
- MTU:** 1500 (text input)

Figure 6. Client configuration for a psk-mixed+ccmp network

Table 3. Parameters for psk-mixed+ccmp

Field	Value
Adapter	Selected radio adapter. <b>In this example: radio0.</b>
Mode	Operating mode: <b>sta</b> .
Encryption	Security and encryption: <i>None</i> (no security), <i>psk-mixed+ccmp</i> (standard security with a shared key), or <i>wpa-mixed-ccmp</i> (security with a RADIUS authentication server). <b>In this example: psk-mixed+ccmp.</b>
SSID	Wireless network identifier. <b>In this example: dnx-123456.</b>
Key	Network key (password), used only for <i>psk-mixed+ccmp</i> .
WDS	Enables Ethernet Bridging.
WMM	Enables Wireless Multimedia QoS for multimedia traffic.
MTU	Maximum frame size.

**wpa-mixed+ccmp mode**

wifi2

Disabled

Adapter

Mode

Encryption

SSID

WDS

WMM

MTU

EAP Method

Username

WPA/WPA2 enterprise authentication username  
value required  
example:  
bridge0  
vpn  
client\_1

Password

WPA/WPA2 enterprise authentication password  
value required

CA Certificate

Certificate

Figure 7. Client configuration for a wpa-mixed+ccmp network

Table 4. Parameters for wpa-mixed+ccmp

Field	Value
Adapter	Selected radio adapter. <b>In this example: radio0.</b>
Mode	Operating mode: <b>sta.</b>
Encryption	Security and encryption. <b>In this example: wpa-mixed+ccmp.</b>
SSID	Wireless network identifier. <b>In this example: dnx-123456.</b>
WDS	Enables Ethernet Bridging.
WMM	Enables Wireless Multimedia QoS for multimedia traffic.
MTU	Maximum frame size.
EAP Method	EAP method. Available: <i>peap, tls, ttls</i> . Select the <b>EAP Method</b> parameter from the list that corresponds to the network requirements.
Username	User name.
Password	User password.
CA Certificate *	The certificate of the Certification Authority (CA) used to authenticate the RADIUS server certificate.
Certificate *	Client certificate.

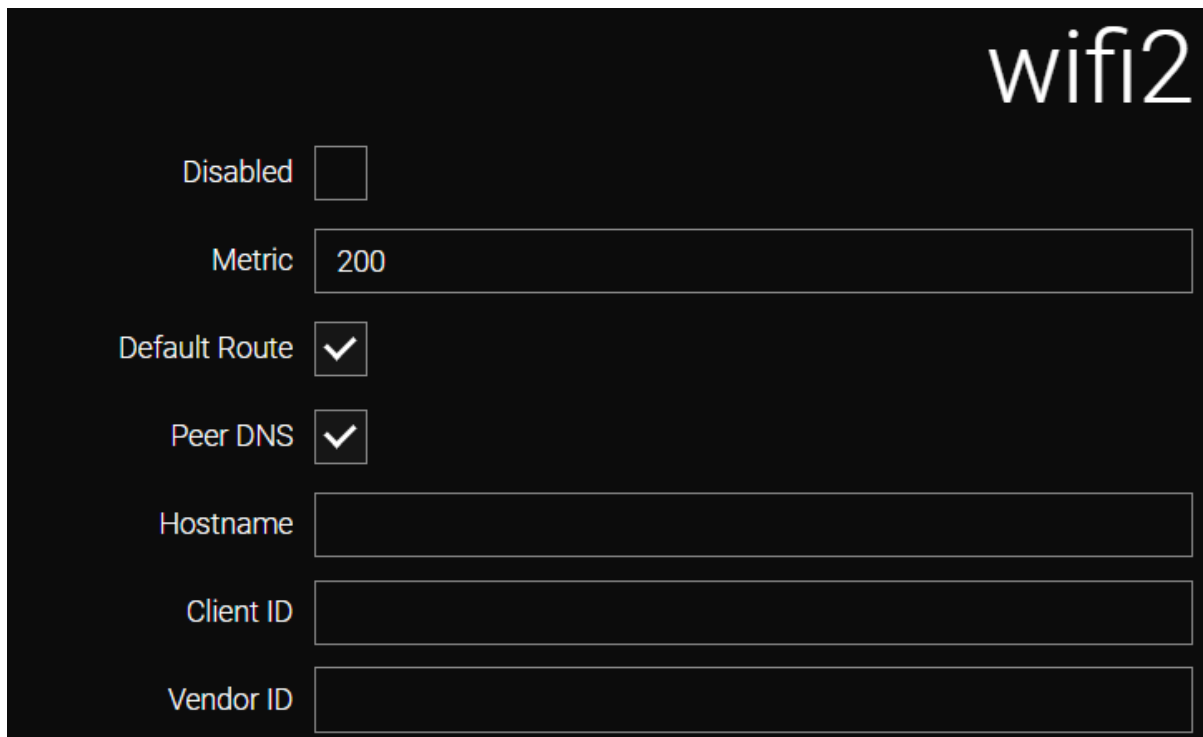


\* Select the required certificates from the **CA Certificate** and **Certificate** lists. Certificates must be pre-uploaded to the */storage/file* section and subsequently imported in the */storage/certificate* section.

3. After connecting to the network, an interface must be created in the */ip/interface* section. Navigate to */ip/interface* and click **Add**.

Figure 8. Configuring the virtual interface

4. Configure parameters in the displayed form if required, or leave them at their default values.



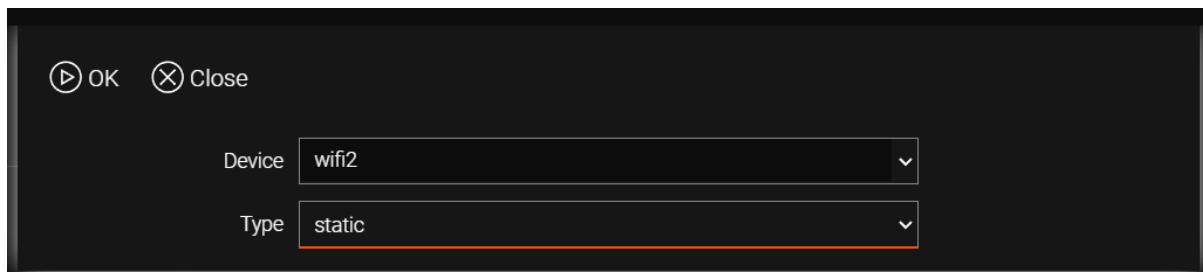
The screenshot shows a configuration form for 'wifi2' with the following fields and values:

- Disabled:
- Metric: 200
- Default Route:
- Peer DNS:
- Hostname:
- Client ID:
- Vendor ID:

Figure 9. Configuring DHCP settings

5. If a static IP address is required:

- Navigate to the */ip/interface* section, click the **Add** button, and select *static* in the **Type** field.

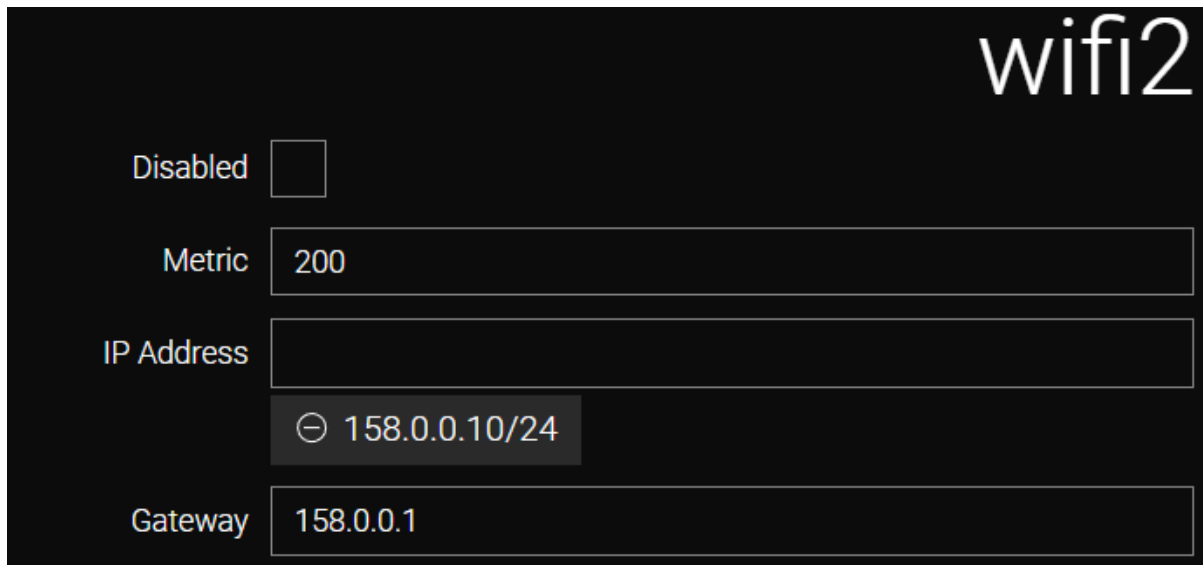


The screenshot shows a dialog box for configuring a static IP address with the following fields and values:

- Device: wifi2
- Type: static

Figure 10. Configuring a static IP address

- Specify the IP address with the subnet mask (e.g., *158.0.0.10/24*) and enter the gateway address in the **Gateway** field.



The screenshot shows a configuration interface for a wireless network named 'wifi2'. The interface is dark-themed with white text. It contains the following fields:

- Disabled:** A checkbox that is currently unchecked.
- Metric:** A text input field containing the value '200'.
- IP Address:** A text input field that is currently empty. Below it, a dropdown menu is open, showing the selected value '158.0.0.10/24' with a minus sign icon to its left.
- Gateway:** A text input field containing the value '158.0.0.1'.

Figure 10. Configuring a static IP address

6. Click **Apply** and save the configuration using the `/system config commit` command.



Donyx routers support concurrent **Access Point (AP)** and **Station (STA)** operation on a single radio module. This configuration is implemented by defining two wireless networks—one for each mode—sharing a common hardware adapter. Due to technical constraints, the broadcasted **AP** functions only while an active **STA** connection to an upstream Wi-Fi network is maintained. Should the router lose its connection to the remote access point, the local wireless network will also cease to function.

## Wi-Fi Configuration via CLI

### Access Point Mode

To create a network in *psk-mixed+ccmp* mode:

```
/wireless network add name=wifi1 adapter=radio0
  disabled -
  encryption psk-mixed+ccmp
  hidden -
  isolate false
  key password
  mac-filter disable
  mode ap
  mtu 1500
  ssid wifi1-AP
  wds -
  wmm true
  apply
```

To create a network in *wpa-mixed+ccmp* mode, using *192.168.1.1* as the RADIUS server address and *sharedkey* as the common encryption key:

```
/wireless network add name=wifi1 adapter=radio0
  auth-secret sharedkey
  auth-server 192.168.1.1
  disabled -
  encryption wpa-mixed+ccmp
  hidden -
  isolate false
  mode ap
  mtu 1500
  ssid wifi1-AP
  wds -
  wmm true
  apply
```

To create an open network with client isolation enabled:

```
/wireless network add name=wifi1 adapter=radio0
  disabled -
  encryption none
  hidden -
  isolate true
  mac-filter disable
  mode ap
  mtu 1500
  ssid wifi1-Open
  wds -
  wmm true
  apply
```

To configure the bridge (assuming the default *bridge0*):

```
/network bridge bridge0
  port wifi1
  apply
```

### Station (STA) Mode

To connect to the *dnx-123456* network using *password* as the shared key in *psk-mixed+ccmp* mode:

```
/wireless network add name=wifi2 adapter=radio0
  disabled -
  encryption psk-mixed+ccmp
  key password
  mode sta
  mtu 1500
  ssid dnx-123456
  wds -
  wmm true
  apply
```

To establish a connection to the *dnx-123456* network using the *username* and *password* credentials in *wpa-mixed+ccmp* (WPA/WPA2 Enterprise) mode:

```
/wireless network add name=wifi2 adapter=radio0
  ca -
  cert -
  disabled -
  eap-method peap
  eap-password password
  eap-username username
  encryption wpa-mixed+ccmp
  mode sta
  mtu 1500
  ssid dnx-123456
  wds -
  wmm true
  apply
```

To configure a **DHCP** connection:

```
/ip interface add device=wifi2 type=dhcp
  defaultroute true
  dhcp-clientid -
  dhcp-vendorid -
  disabled -
  metric 200
  peer-dns true
  apply
```

To configure a static IP connection (where *158.0.0.1* is the gateway and *158.0.0.10/24* is the assigned IP address and subnet mask):

```
/ip interface add device=wifi2 type=static
  disabled -
  gateway 158.0.0.1
  ip-address 158.0.0.10/24
  metric 200
```



All modifications are permanently saved to the router configuration only after executing the */system config commit* command or clicking the **commit** button in the web interface.