# 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.

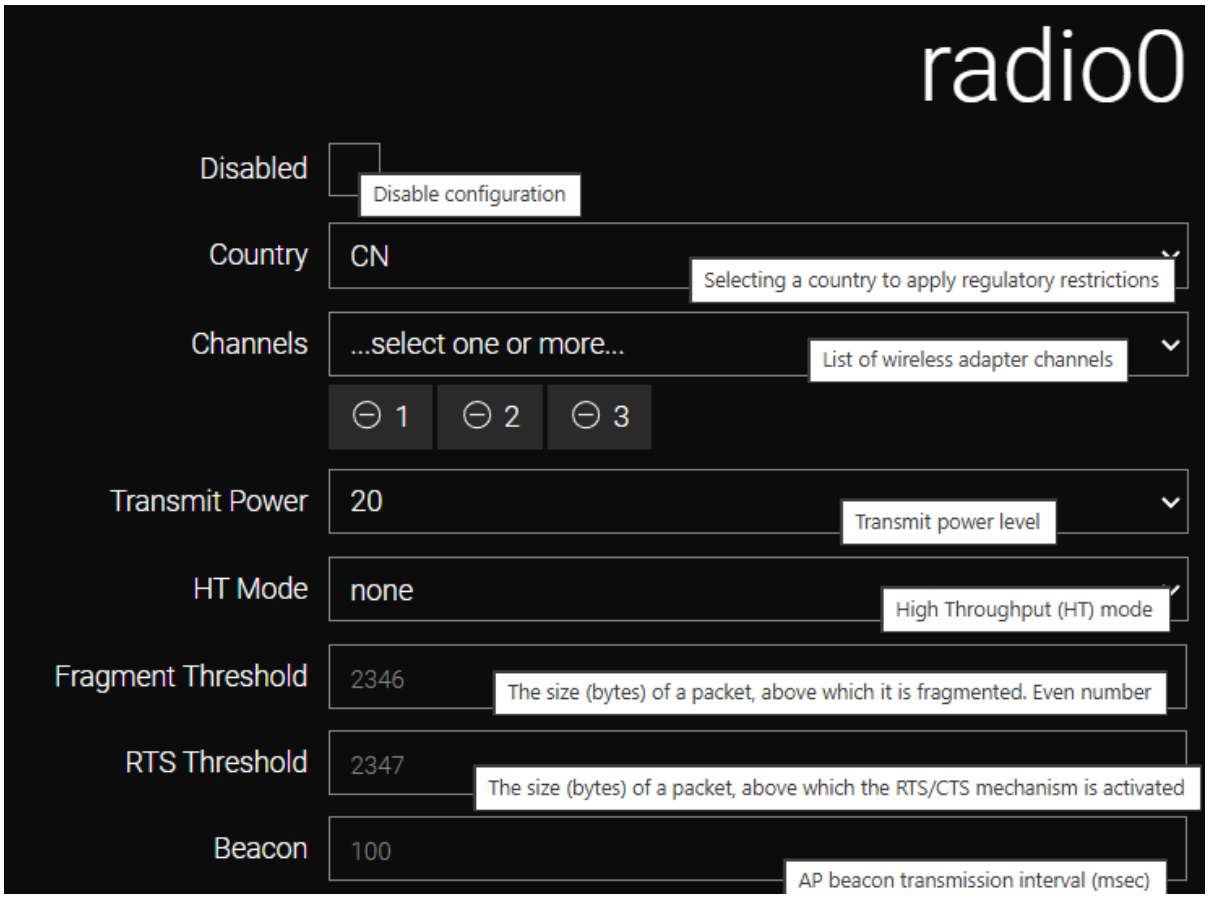


Figure 1. Adapter Configuration

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:<br>• **none selected** — search across all available channels.<br>• **single value selected** — no search is performed; the specified channel is used.<br>• **multiple values selected** — search is performed only among the specified channels. |

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**.


Figure 2. Name and radio module selection

2. Configure the network parameters in the subsequent menu:

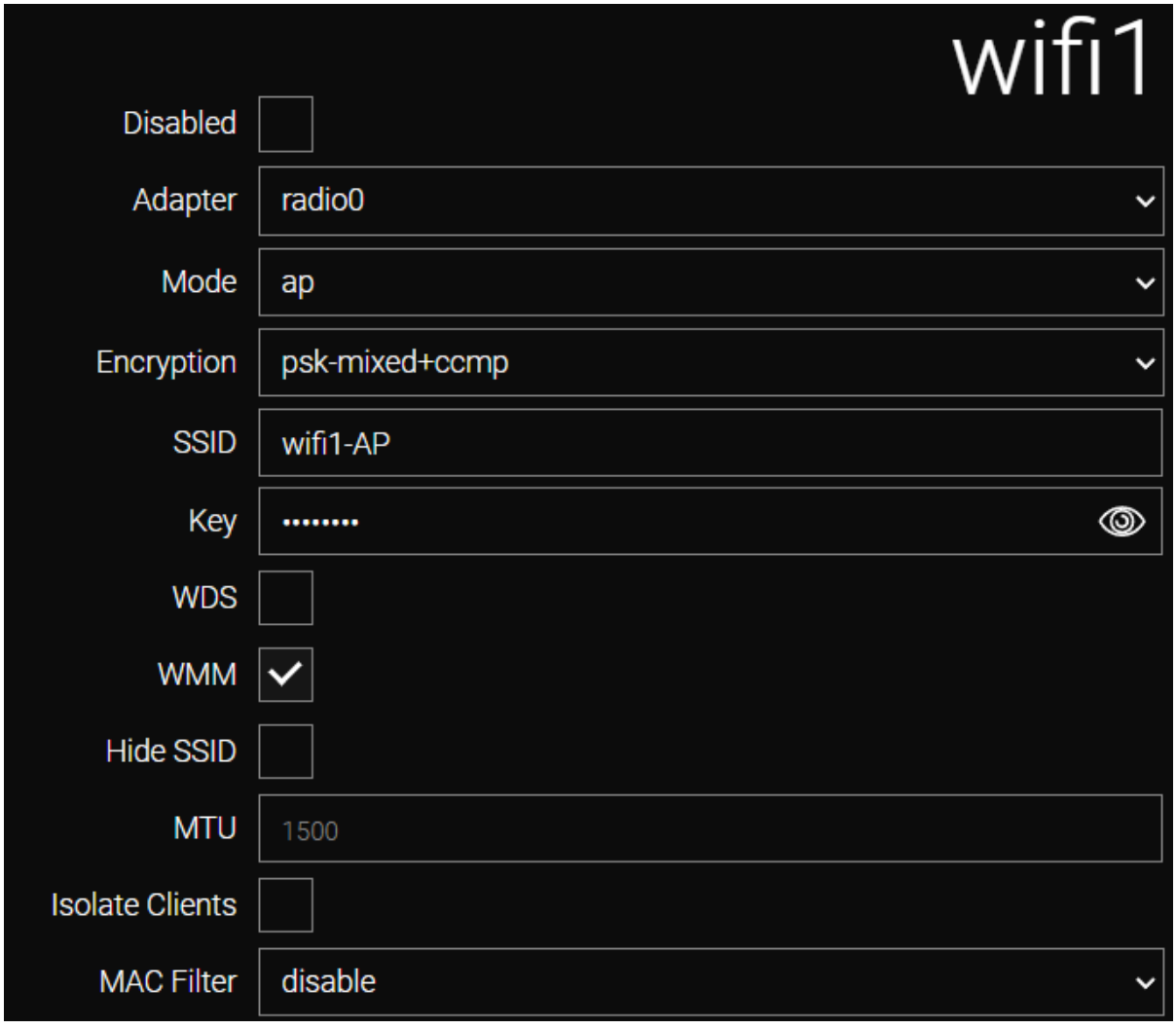


Figure 3. Network configuration in psk-mixed+ccmp mode

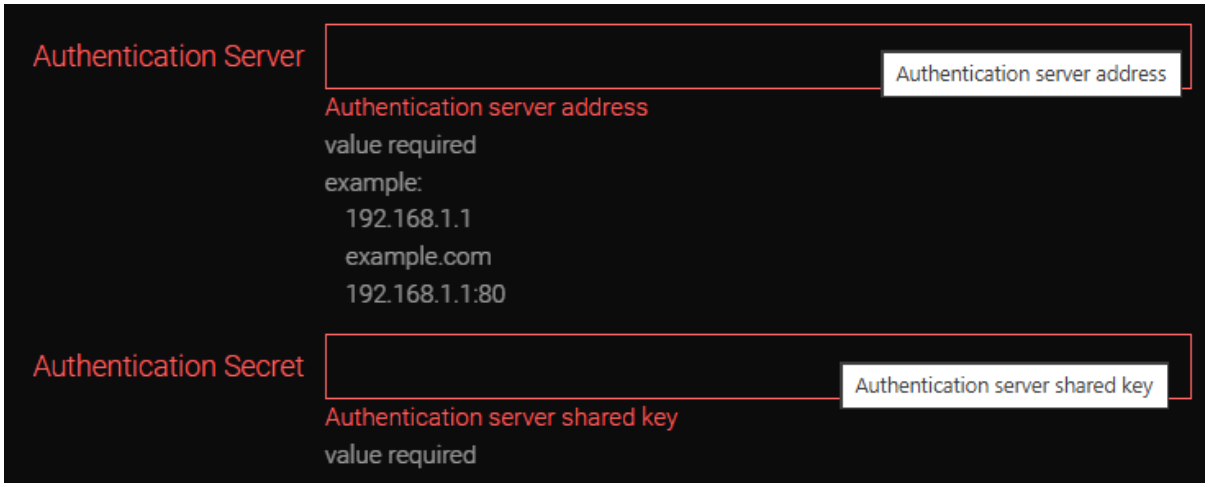


Figure 4. Additional fields for wpa-mixed-ccmp

- 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 (*radio0* is used for single-adapter configurations). |
| Mode | Operating mode: *ap* (Access Point) or *sta* (Station). |
| Encryption | Security and encryption settings: *None* (no security), *psk-mixed+ccmp* (standard security with a shared key), or *wpa-mixed-ccmp* (security with a RADIUS authentication server). |
| SSID | Wireless network identifier. |
| Key | Network key (password), applicable only to *psk-mixed+ccmp*. |
| 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: *allow* (allowlist), *deny* (denylist), or *disable* (filtering off). |
| Authentication server | RADIUS server address (applicable only to *wpa-mixed-ccmp*). |
| Authentication secret | Shared encryption key for the RADIUS server (applicable only to *wpa-mixed-ccmp*). |

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

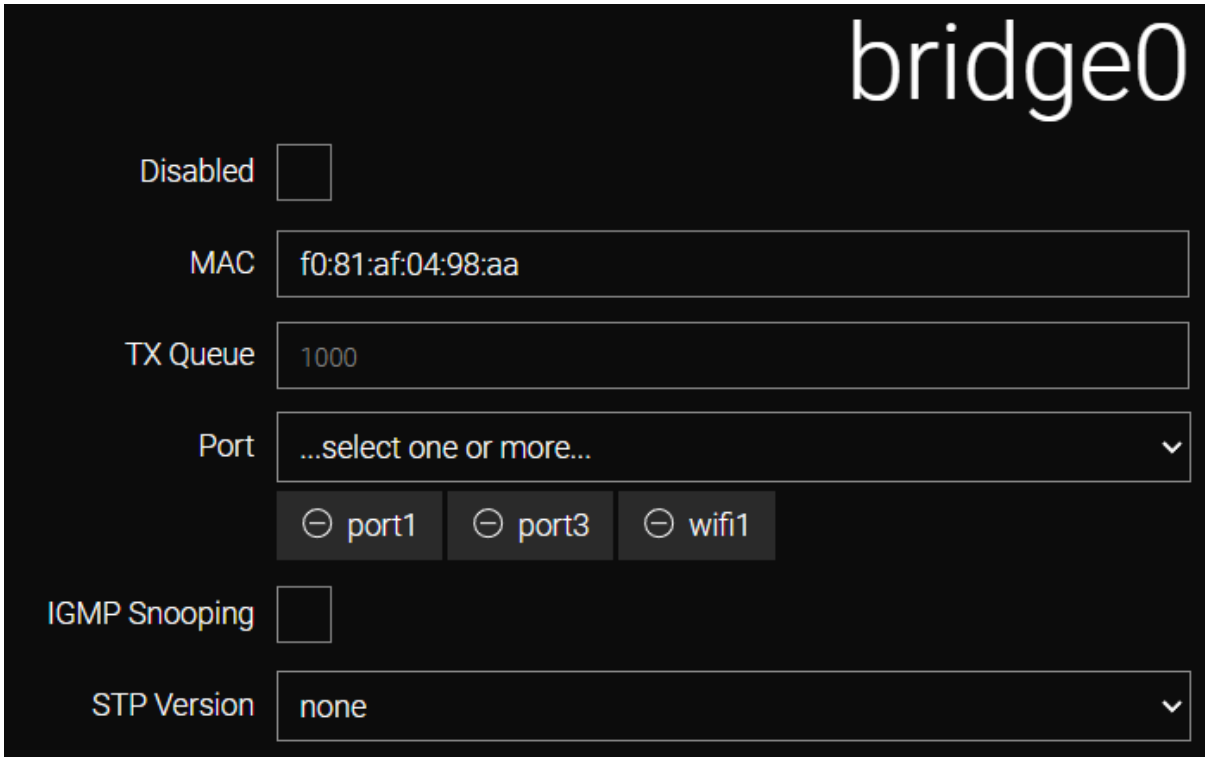


Figure 5. Bridging the wireless network with the local network

## 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

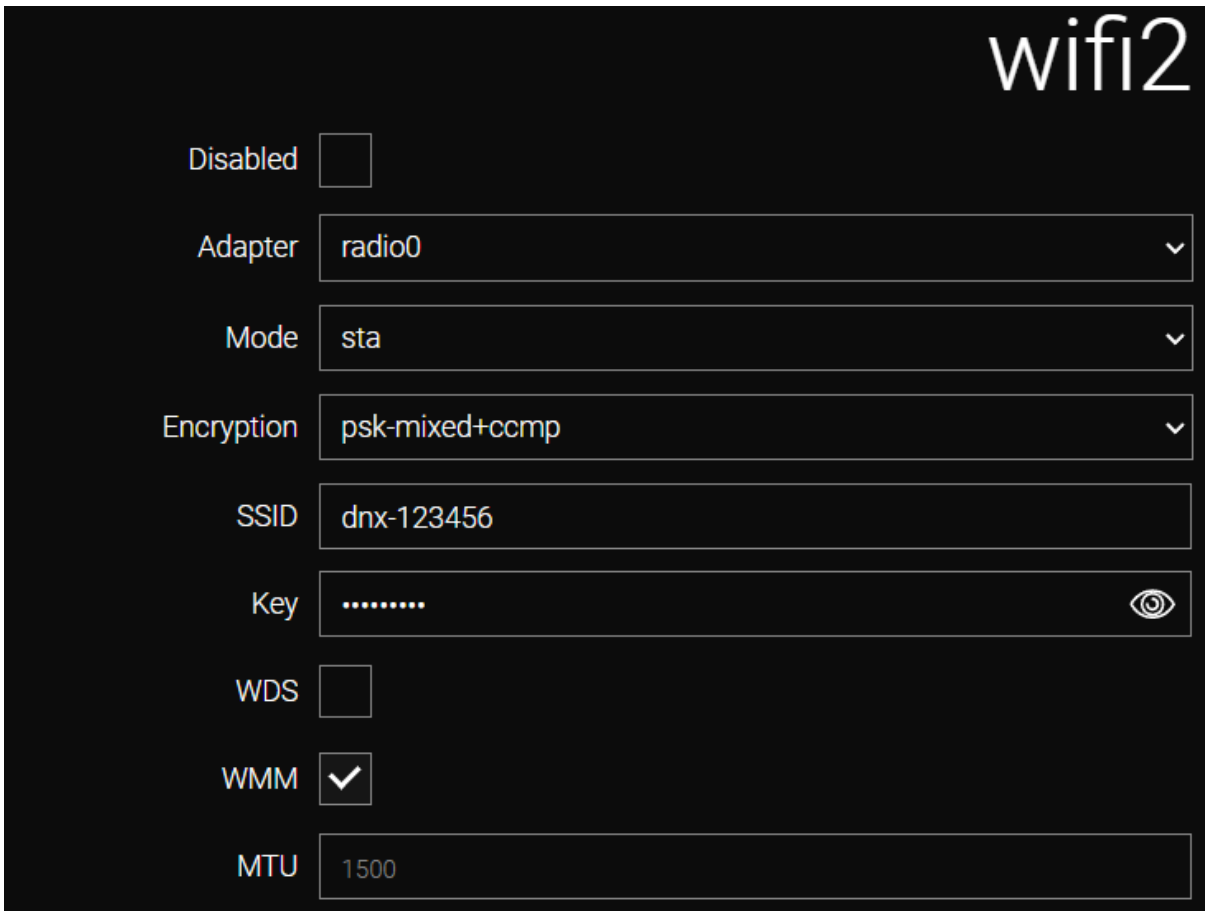


Figure 6. Client configuration for a psk-mixed+ccmp network

Table 3. Parameters for psk-mixed+ccmp

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

### wpa-mixed+ccmp mode

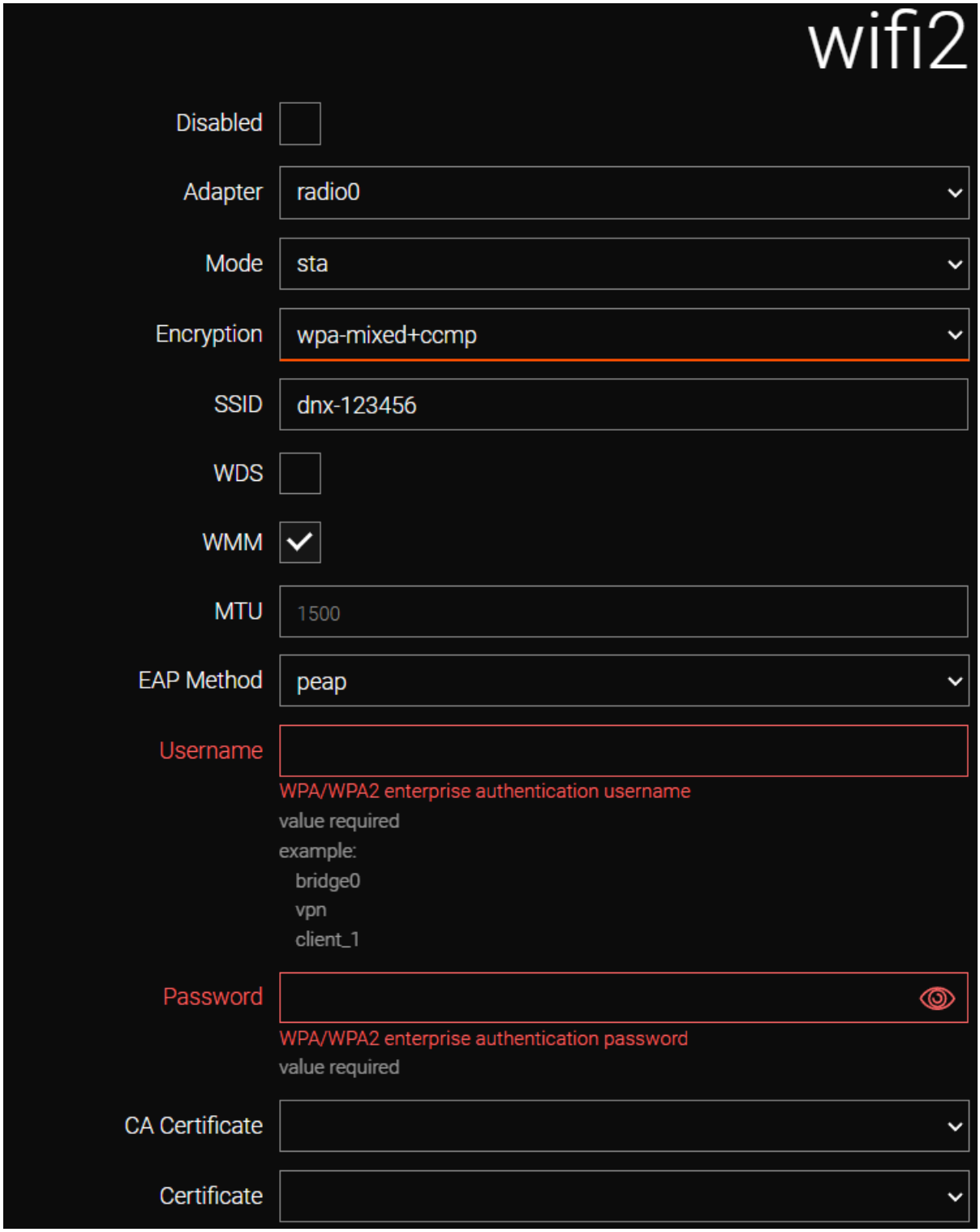


Figure 7. Client configuration for a wpa-mixed+ccmp network

Table 4. Parameters for wpa-mixed+ccmp

| Field | Value |
|---|---|
| Adapter | Selected radio adapter. **In this example: *radio0*.** |
| Mode | Operating mode: ***sta***. |
| Encryption | Security and encryption. **In this example: *wpa-mixed+ccmp*.** |
| SSID | Wireless network identifier. **In this example: *dnx-123456*.** |
| WDS | Enables Ethernet Bridging. |
| WMM | Enables Wireless Multimedia QoS for multimedia traffic. |
| MTU | Maximum frame size. |
| EAP Method | EAP method. Available: *peap*, *tls*, *ttls*. Select the **EAP Method** 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**.

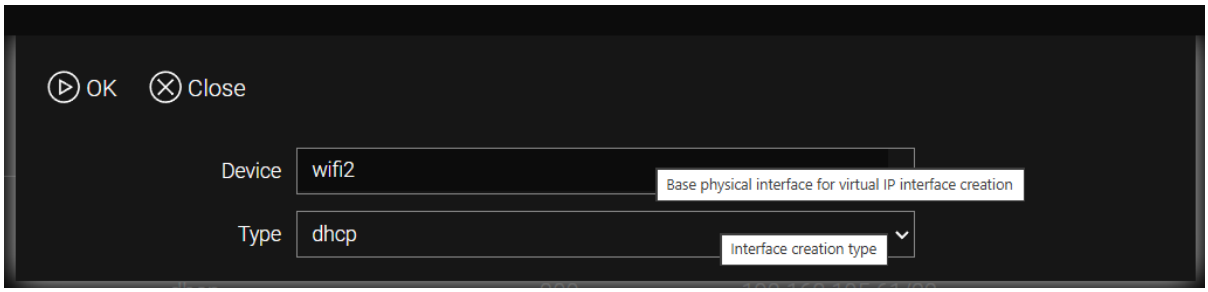


Figure 8. Configuring the virtual interface

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


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.


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.

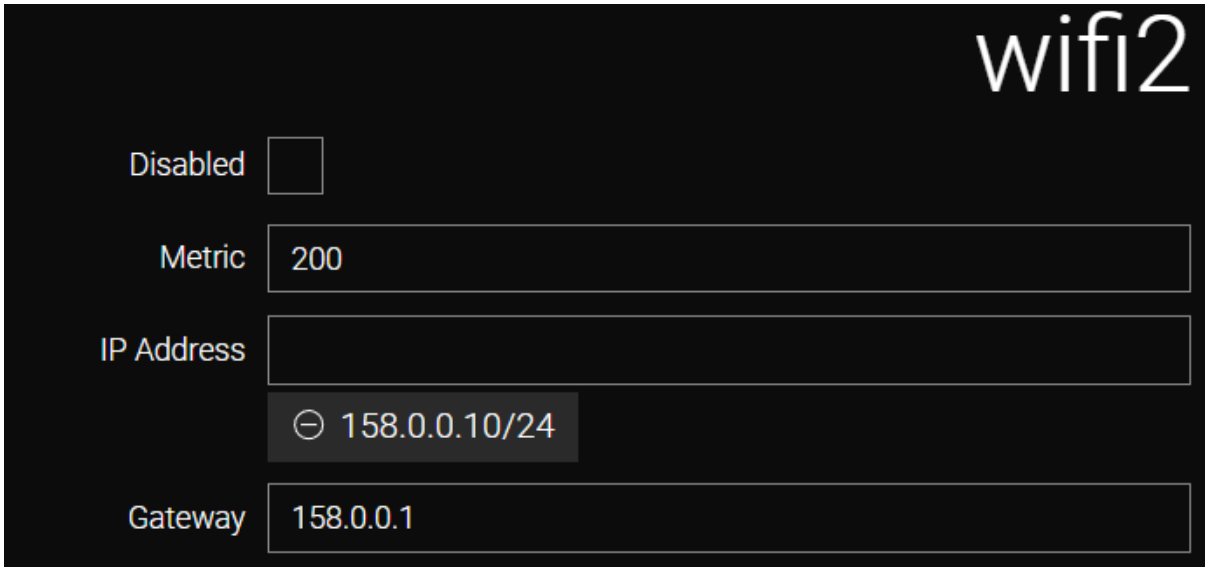


Figure 10. Configuring a static IP address

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.