



Configure and validate radio channel and bandwidth

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Configuring Operating Channel from CLI

To configure operating channel, use the following CLI commands:

1. Configure the wireless device with radio interface number <1 or 2>

```
Device# configure dot11Radio <interface>
```

2. Set the operating channel id and the valid range is from 1 to 256

```
Device# configure dot11Radio <interface> channel <channel id>
```

3. To end the current configuration, use the following CLI command:

```
Device (configure dot11Radio <interface> channel <channel id>)# end
```

Example:

```
Device# configure dot11Radio [1|2] channel <1 to 256>
```

Configure channel bandwidth from CLI

1. Configure the wireless device with radio interface number <1 or 2>.

```
Device#configure dot11Radio <interface>
```

2. Set channel bandwidth in MHz.

- Radio 1 supports 20, 40, and 80 MHz bandwidths.
- Radio 2 supports 20, 40, 80, and 160 MHz bandwidths.

```
Device#configure dot11Radio [1|2] band-width [20|40|80|160]
```

3. Returns to privileged EXEC mode.

```
Device (configure dot11Radio [1|2] band-width [20|40|80|160])#end
```

Validating operating channel and bandwidth from CLI

To validate radio channel and bandwidth, use the following show command:

```
Device# show dot11Radio <interface> config
```

Example:

```
Device# show dot11Radio 1 config
Interface : enabled
Mode : fluidmax secondary
Frequency : 5180 MHz
Channel : 36
Channel width : 40 MHz
```

```
Device# show dot11Radio 2 config
Interface : enabled
Mode : fluidity
Frequency : 5785 MHz
Channel : 157
Channel width : 40 MHz
```

Configure radio channel and bandwidth from GUI

To configure Radio channel and bandwidth using GUI, set the operating channel ID, Radio mode as Fluidity or fixed infrastructure and set the Radio frequency range and bandwidth.

Following image shows the configuration of Radio channel and bandwidth:

Cisco URWB IW9167EH Configurator
5.21.201.88 - MESH POINT MODE

WIRELESS RADIO

Wireless Settings

Shared Passphrase is an alphanumeric string or special characters excluding [apex] [double apex] [backtick] [dollar] [=equal] [backslash] and whitespace (e.g. "mysecurecamnet") that identifies your network. It MUST be the same for all the Cisco URWB units belonging to the same network.

Shared Passphrase:

In order to establish a wireless connection between Cisco URWB units, they need to be operating on the same frequency.

Radio 1 Settings

Role:

Frequency (MHz):

Channel Width (MHz):

Radio 2 Settings

Role:

Frequency (MHz):

Channel Width (MHz):

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Following image shows the status of Radio channel and bandwidth configuration and specific information of each wireless interface.

Cisco URWB IW9167EH Configurator
5.21.201.88 - MESH POINT MODE

GENERAL INFORMATION

Operating Mode: Mesh Point
Uptime: 4 days, 16:23 (hh:mm)
Firmware version: 8.8.1.10

DEVICE SETTINGS

IP: 10.115.11.118
Netmask: 255.255.255.0
MAC address: 40:36:5a:15:c9:58
Configured MTU: 1530

WIRELESS SETTINGS

Passphrase: CiscoURWB-118
Operating region: B

Radio 1

Interface: enabled
Mode: fixed infrastructure
Frequency: 5260 MHz
Channel: 52
Channel Width: 20 MHz
Current tx power: 25 dBm
Current tx power level: 1
Antenna gain: not selected
Antenna number: 2
Radio Mode: csma/ca
Maximum link length: 3 km

Radio 2

Interface: disabled
Mode: fixed infrastructure
Frequency: 5180 MHz
Channel: 36
Channel Width: 80 MHz
Current tx power: 19 dBm
Current tx power level: 1
Antenna gain: not selected
Antenna number: 2
Radio Mode: csma/ca
Maximum link length: 3 km

DIAGNOSTIC TOOL

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Configure Fluidity using GUI

To configure a Fluidity mode using GUI, follow these scenarios:

1. In the **GENERAL SETTINGS**, click **wireless radio**.

The **WIRELESS RADIO** window appears.

2. Choose Radio mode as **Fluidity** from the **Role** drop-down list.

Once you choose Radio role as **Fluidity**, go to **Fluidity** settings. To go to Fluidity, follow these steps:

1. In the **ADVANCED SETTINGS**, click **Fluidity**.

The **FLUIDITY** window appears.

2. In the **Fluidity Settings**, choose **Unit Role** from the drop-down list. Make device role as any one of following mode:
 - Infrastructure
 - Infrastructure (wireless relay)
 - Vehicle



Note

- Vehicle ID must be unique among all the mobile devices installed on the same vehicle.
- If the device installed on different vehicles must use different Vehicles IDs'.

3. Check the **Automatic Vehicle ID** check box to automatically set Vehicle ID for mobile units.


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Cisco URWB IW9167EH Configurator
 5.21.201.72 - MESH END MODE

IOTD IW Offline
FM-QUADRO

GENERAL SETTINGS
 - general mode
 - wireless radio
 - antenna alignment and stats
NETWORK CONTROL
 - advanced tools
ADVANCED SETTINGS
 - advanced radio settings
 - static routes
 - allowlist / blocklist
 - multicast
 - snmp
 - radius
 - ntp
 - l2tp configuration
 - vlan settings
 - Fluidity
 - misc settings
 - smart license
MANAGEMENT SETTINGS
 - remote access
 - firmware upgrade
 - status
 - configuration settings
 - reset factory default
 - reboot
 - logout

FLUIDITY
Fluidity Settings

The unit can operate in 3 modes: Infrastructure, Infrastructure (wireless relay), Vehicle.
 The unit must be set as Infrastructure when it acts as the entry point of the infrastructure for the mobile vehicles and it is connected to a wired network (backbone) which possibly includes other Infrastructure nodes. The unit must be set as Infrastructure (wireless relay) ONLY when it is used as a wireless relay agent to other Infrastructure units. In this operating mode, the unit MUST NOT be connected to the wired network backbone as it will use the wireless connection to relay the data coming from the mobile units.
 The unit must be set as Vehicle when it is mobile. Vehicle ID must be set ONLY when the unit is configured as Vehicle. Specifically, Vehicle ID must be a unique among all the mobile units installed on the same vehicle. Unit installed on different vehicles must use different Vehicle IDs.
 The Network Type field must be set according to the general network architecture. Choose Flat if the mesh and the infrastructure networks belong to a single layer-2 broadcast domain. Use Multiple Subnets if they are organized as different layer-3 routing domains.

Unit Role: Vehicle

Automatic Vehicle ID: ☐ Enable

Vehicle ID:


Network Type: Flat

The following advanced settings allow to fine-tune the performance of the system depending on the specific environment. Please do not alter this settings unless you have read the manual first and you know what you are doing.
 The Handoff Logic controls the algorithm used by a mobile radio to select the best Infrastructure point to connect to. In Normal mode, the point providing the strongest signal is selected. In Load Balancing mode, the mobile radio prefers the point which provides the best balance between signal strength and amount of traffic carried.

Handoff Logic: Standard

Reset Save

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 WIRELESS BACKHAUL

Cisco URWB IW9167EH Configurator
 5.21.201.72 - MESH END MODE

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GENERAL SETTINGS
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FLUIDITY
Fluidity Settings

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 The unit must be set as Vehicle when it is mobile. Vehicle ID must be set ONLY when the unit is configured as Vehicle. Specifically, Vehicle ID must be a unique among all the mobile units installed on the same vehicle. Unit installed on different vehicles must use different Vehicle IDs.
 The Network Type field must be set according to the general network architecture. Choose Flat if the mesh and the infrastructure networks belong to a single layer-2 broadcast domain. Use Multiple Subnets if they are organized as different layer-3 routing domains.

Unit Role: Vehicle

Automatic Vehicle ID: ☒ Enable

Network Type: Flat

The following advanced settings allow to fine-tune the performance of the system depending on the specific environment. Please do not alter this settings unless you have read the manual first and you know what you are doing.
 The Handoff Logic controls the algorithm used by a mobile radio to select the best Infrastructure point to connect to. In Normal mode, the point providing the strongest signal is selected. In Load Balancing mode, the mobile radio prefers the point which provides the best balance between signal strength and amount of traffic carried.

Handoff Logic: Standard

Reset Save

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Following Fluidity configuration shows wireless interface device role configured as infrastructure mode:

Configure Fluidity using GUI

Cisco URWB IW9167EH Configurator
5.21.201.72 - MESH END MODE

WIRELESS RADIO

Wireless Settings

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Shared Passphrase:

In order to establish a wireless connection between Cisco URWB units, they need to be operating on the same frequency.

Radio 1 Settings

Role:

Frequency (MHz):

Channel Width (MHz):

Radio 2 Settings

Role:

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Cisco URWB IW9167EH Configurator
5.21.201.72 - MESH END MODE

FLUIDITY

Fluidity Settings

The unit can operate in 3 modes: Infrastructure, Infrastructure (wireless relay), Vehicle.
The unit must be set as Infrastructure when it acts as the entry point of the infrastructure for the mobile vehicles and it is connected to a wired network (backbone) which possibly includes other infrastructure nodes. The unit must be set as Infrastructure (wireless relay) ONLY when it is used as a wireless relay agent to other Infrastructure units. In this operating mode, the unit MUST NOT be connected to the wired network backbone as it will use the wireless connection to relay the data coming from the mobile units.
The unit must be set as Vehicle when it is mobile. Vehicle ID must be set ONLY when the unit is configured as Vehicle. Specifically, Vehicle ID must be a unique among all the mobile units installed on the same vehicle. Unit installed on different vehicles must use different Vehicle IDs.
The Network Type field must be set according to the general network architecture. Choose Flat if the mesh and the infrastructure networks belong to a single layer-2 broadcast domain. Use Multiple Subnets if they are organized as different layer-3 routing domains.

Unit Role:

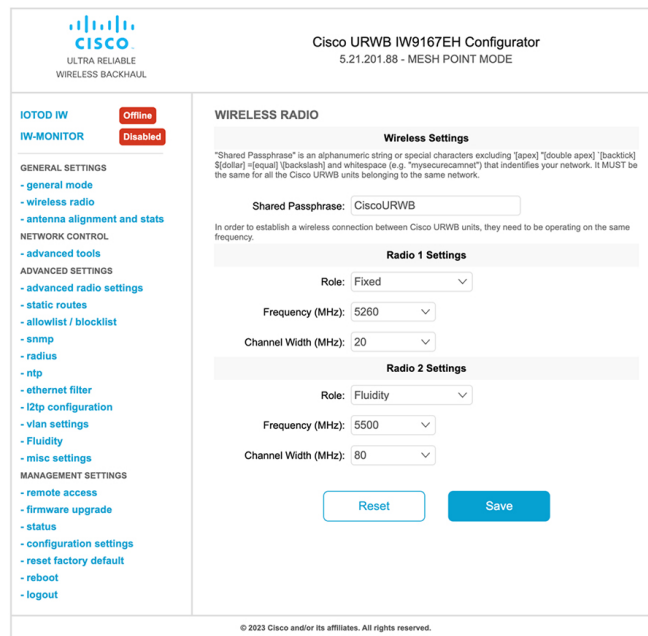
Network Type:

The following advanced settings allow to fine-tune the performance of the system depending on the specific environment. Please do not alter this settings unless you have read the manual first and you know what you are doing.
The Handoff Logic controls the algorithm used by a mobile radio to select the best infrastructure point to connect to. In Normal mode, the point providing the strongest signal is selected. In Load Balancing mode, the mobile radio prefers the point which provides the best balance between signal strength and amount of traffic carried.

Handoff Logic:

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The following image shows, both radios must be configured as Fluidity for role Vehicle. if one wireless interface is configured in fixed mode and the other one is configured in Fluidity mode then unit role Vehicle cannot be selected.



Cisco URWB IW9167EH Configurator
5.21.201.88 - MESH POINT MODE

WIRELESS RADIO

Wireless Settings

"Shared Passphrase" is an alphanumeric string or special characters excluding [apex] [double apex] [backtick] [dollar] [equal] [backslash] and whitespace (e.g. "mysecurecamnet") that identifies your network. It MUST be the same for all the Cisco URWB units belonging to the same network.

Shared Passphrase:

In order to establish a wireless connection between Cisco URWB units, they need to be operating on the same frequency.

Radio 1 Settings

Role: Fixed

Frequency (MHz): 5260

Channel Width (MHz): 20

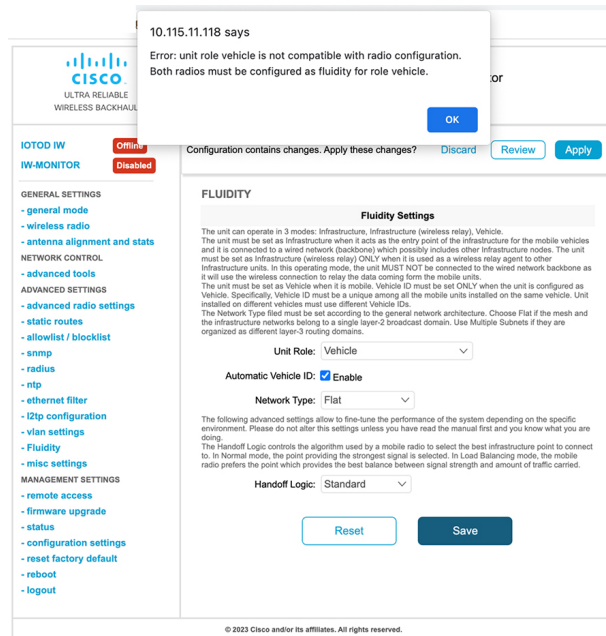
Radio 2 Settings

Role: Fluidity

Frequency (MHz): 5500

Channel Width (MHz): 80

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10.115.11.118 says
Error: unit role vehicle is not compatible with radio configuration.
Both radios must be configured as fluidity for role vehicle.

Configuration contains changes. Apply these changes?

FLUIDITY

Fluidity Settings

The unit can operate in 3 modes: Infrastructure, Infrastructure (wireless relay), Vehicle.
The unit must be set as Infrastructure when it acts as the entry point of the infrastructure for the mobile vehicles and it is connected to a wired network (backbone) which possibly includes other infrastructure nodes. The unit must be set as Infrastructure (wireless relay) ONLY when it is used as a wireless relay agent to other infrastructure units. In this operating mode, the unit MUST NOT be connected to the wired network backbone as it will use the wireless connection to relay the data coming from the mobile units.
The unit must be set as Vehicle when it is mobile. Vehicle ID must be set ONLY when the unit is configured as Vehicle. Specifically, Vehicle ID must be a unique among all the mobile units installed on the same vehicle. Unit installed on different vehicles must use different Vehicle IDs.
The Network Type field must be set according to the general network architecture. Choose Flat if the mesh and the infrastructure networks belong to a single layer-2 broadcast domain. Use Multiple Subnets if they are organized as different layer-3 routing domains.

Unit Role: Vehicle

Automatic Vehicle ID: ☒ Enable

Network Type: Flat

The following advanced settings allow to fine-tune the performance of the system depending on the specific environment. Please do not alter this settings unless you have read the manual first and you know what you are doing.
The Handoff Logic controls the algorithm used by a mobile radio to select the best infrastructure point to connect to. In Normal mode, the point providing the strongest signal is selected. In Load Balancing mode, the mobile radio prefers the point which provides the best balance between signal strength and amount of traffic carried.

Handoff Logic: Standard

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Configure fluidity using CLI

To enable Fluidity, use the following CLI commands:



Note At least one radio interface should be in Fluidity mode.

```
Device# configure dot11Radio <interface> mode fluidity
```

Example to enable Fluidity for radio 1:

```
configure dot11Radio 1 mode fluidity
```

If the desired Fluidity role is Vehicle both radios should be in Fluidity mode:

```
configure dot11Radio 1 mode fluidity
configure dot11Radio 2 mode fluidity
```

Configuring fluidity role using CLI

To configure Fluidity role (infra or client), use the following CLI commands:

1. Configure the Fluidity role (infrastructure or mobile).

```
Device# configure fluidity id
```

2. Configure Fluidity id mode.

```
Device# configure fluidity id {mode}
Mode is one of the following values
vehicle-auto - vehicle mode with automatic vehicle ID selection
vehicle ID - (alphanumeric) vehicle mode with manual ID.
infrastructure - infrastructure mode
wireless-relay - wireless infrastructure with no ethernet connection to the backhaul
```

3. To end this configuration, use the following CLI command:

```
Device (configure fluidity id {mode}) # end
```

```
Device# wr
```

Example:

```
Device# configure fluidity id [vehicle-auto | infrastructure | vehicle-id |
wireless-relay]
```