Layer 2 Mesh Transparency

Overview of Layer 2 mesh transparency

From IEC6400 Release 1.1.0, the IEC6400 gateway supports Layer 2 Mesh Transparency feature. Layer 2 mesh transparency feature allows to forward non-IPv4 Layer 2 protocols across the URWB network by selectively filtering which ether-types are permitted. The selection of allowed ether-types can be performed from either the CLI or the GUI.

Features of URWB MPLS Layer 2 mesh networks

The URWB mesh data plane supports these functionalities when used in MPLS Layer 2 mode:

- Detects and reports Ethertype present in the URWB network automatically.
- Supports the configurable list of Ethertypes allowed in the network.
- Manages transparency of Layer 2 protocols in a convenient manner.

List of reserved Ethertypes

These Ethertypes are reserved and cannot be added to the allow list:

Ethertype (value)	Forwardable	Additional Information
0x0000 – 0x05FF	User-configurable	Ethernet-I frames: STP and CDP are subject to other configuration options
0x0800	Yes	IPv4
0x0806	Yes	ARP
0x0900 – 0x09FF	No	URWB signaling protocols
0x8100	Yes	IEEE 802.1Q VLAN encapsulation

Ethertype (value)	Forwardable	Additional Information
0x8847 – 0x8848	No	MPLS
0xFFFF	No	IANA reserved

Advantages of Layer 2 mesh transparency

- Provides detailed control over the forwarding of Layer 2 protocols.
- Ensures backward compatibility with existing deployments by default.
- Allows for full transparency to enable all Layer 2 protocols, if needed.
- Facilitates MAC address learning for generic Ethernet types.

Manage Ethertypes using GUI

Perform these tasks to manage Layer 2 protocols parameters on the gateway:

Add an Ethertype to allowed Ethernet list using GUI

Procedure

Step 1 Launch your computer's web browser and enter the URL to open the configurator login page.

Step 2 Enter your username and password in the respective **Username** and **Enable Password** fields.

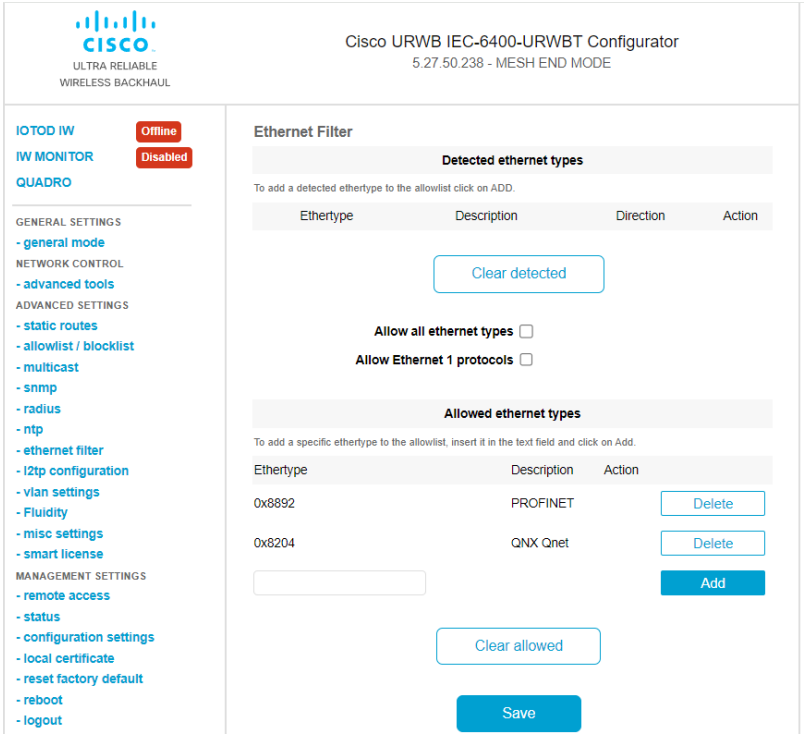
Step 3 Click **Login**.
Once you have successfully logged into the GUI, the URWB configurator is displayed.

Step 4 From the **ADVANCED SETTINGS**, click **ethernet filter** to open the **Ethernet Filter** window.

Step 5 In the **Detected ethernet types** section, click **Add** to add an Ethertype to the **Allowed ethernet types** section.

Step 6 In the **Allowed ethernet types** section, to add an Ethertype that has not been detected yet, enter the specific Ethertype value in the text box and click **Add**.

Step 7 Click **Save** and **Apply** to update the configuration.
The gateway reboots to apply the changes.



Allow all Ethertypes to the allow list using GUI

Procedure

Step 1 Launch your computer's web browser and enter the URL to open the configurator login page.

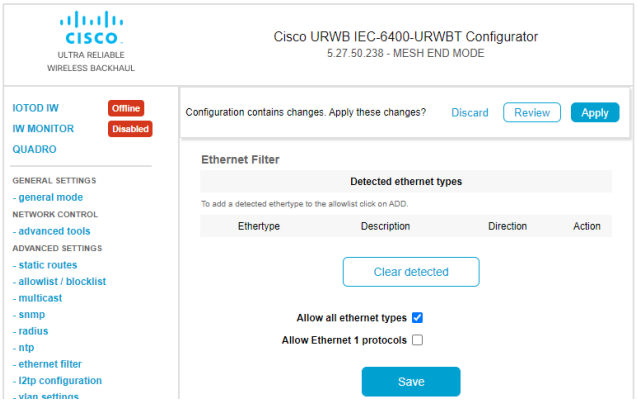
Step 2 Enter your username and password in the respective **Username** and **Enable Password** fields.

Step 3 Click **Login**.
Once you have successfully logged into the GUI, the URWB configurator is displayed.

Step 4 From the **ADVANCED SETTINGS**, click **ethernet filter** to open the **Ethernet Filter** window.

Step 5 Check the **Allow all ethernet types** check box in the **Ethernet Filter** section to allow all Ethertypes.

Step 6 Click **Save** and **Apply** to update the configuration.
The gateway reboots to apply the changes.



Clear list of allowed Ethertypes from the allowed Ethernet list using GUI

Procedure

Step 1 Launch your computer's web browser and enter the URL to open the configurator login page.

Step 2 Enter your username and password in the respective **Username** and **Enable Password** fields.

Step 3 Click **Login**.
Once you have successfully logged into the GUI, the URWB configurator is displayed.

Step 4 From the **ADVANCED SETTINGS**, click **ethernet filter** to open the **Ethernet Filter** window.

Step 5 In the **Allowed ethernet types** section, click **Clear allowed** to clear all the Ethertypes from the **Allowed ethernet types** section.
When you click **Clear allowed**, the **Allowed ethernet types** section is cleared.

Step 6 Click **Save** and **Apply** to update the configuration.
The gateway reboots to apply the changes.

Delete list of detected Ethertypes in the detected Ethernet list using GUI

Procedure

Step 1 Launch your computer's web browser and enter the URL to open the configurator login page.

Step 2 Enter your username and password in the respective **Username** and **Enable Password** fields.

Step 3 Click **Login**.
Once you have successfully logged into the GUI, the URWB configurator is displayed.

Step 4 From the **ADVANCED SETTINGS**, click **ethernet filter** to open the **Ethernet Filter** window.

Step 5 In the **Detected ethernet types** section, click **Clear detected** to clear all the detected Ethertypes from the list.

When you click **Clear detected**, the **Detected ethernet types** section is cleared.

Manage Ethernet 1 protocols using GUI

Procedure

Step 1 Launch your computer's web browser and enter the URL to open the configurator login page.

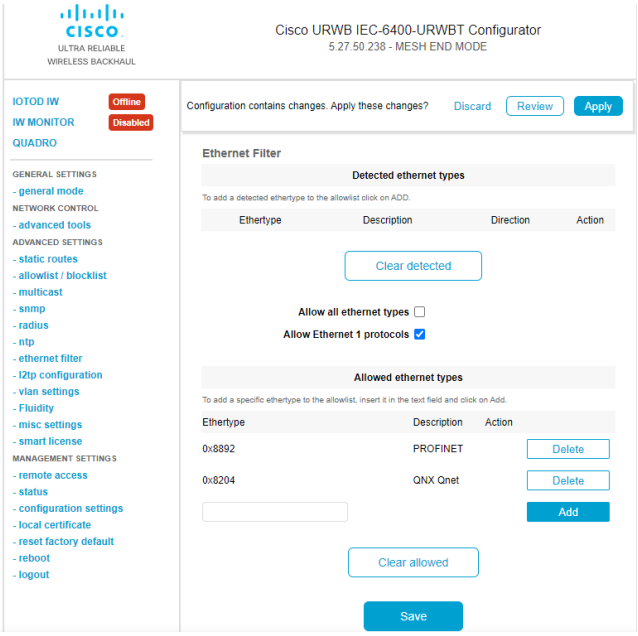
Step 2 Enter your username and password in the respective **Username** and **Enable Password** fields.

Step 3 Click **Login**.
Once you have successfully logged into the GUI, the URWB configurator is displayed.

Step 4 From the **ADVANCED SETTINGS**, click **ethernet filter** to open the **Ethernet Filter** window.

Step 5 Check the **Allow Ethernet 1 protocols** check box in the **Ethernet Filter** window to enable Ethernet 1 protocols.

Step 6 Click **Save** and **Apply** to update the configuration.
The gateway reboots to apply the changes.



Manage Ethertypes using CLI

Perform these tasks to manage Layer 2 protocols parameters on the gateway:

Add an Ethertype to the allow list using CLI

Use the **mpls ether-filter allow-list add** *Ethertype value* command to add a specific Ethertype to the allow list.

```
Device#mpls ether-filter allow-list add 0x86DD
```

Delete an Ethertype from the allow list using CLI

Use the **mpls ether-filter allow-list delete** *Ether-type value* command to delete a specific Ethertype from the allow list.

```
Device#mpls ether-filter allow-list delete 0x86DD
```

Verify list of allowed Ethertypes using CLI

Use the **mpls** command to view the list of allowed Ethertypes from the Ethernet filter allow list.

```
Device#mpls
.
.
.
Ethernet Filter allow-list: 0x8892 0x8204 0x86dd, ethernet-I block
.
.
.
```

Note If Ethernet-I is enabled, the **mpls** show output is shown with **Ethernet Filter allow-list: 0x8892 0x8204 0x86dd**.

Clear all Ethertypes from the allow list using CLI

Use the **mpls ether-filter allow-list clear** command to delete all the detected and allowed Ethertypes from the allow list.

```
Device#mpls ether-filter allow-list clear
```

Verify removed Ethernet filter allow list status using CLI

Use the **mpls** command to view the Ethernet filter allow list.

```
Device#mpls
.
.
.
Ethernet Filter allow-list: none, ethernet-I block
.
.
.
```

Note If the allowed ethertypes has been cleared the **mpls** show output is shown with **Ethernet Filter allow-list: none**.

Add all Ethertypes to the allow list using CLI

Use the **mpls ether-filter allow-list add all** command to add all the Ethertypes to allow list.

```
Device#mpls ether-filter allow-list add all
```

Verify all Ethertypes in the allow list using CLI

Use **mpls** command to view the Ethernet filter allow list.

```
Device#mpls
.
.
.
Ethernet Filter allow-list: all, ethernet-I block
```

Note If all Ethertypes are allowed, the **mpls** show output is shown with **Ethernet Filter allow-list: all**.

Enable Ethernet 1 protocol using CLI

Use the **mpls ether-filter ethernet-I forward** command to enable Ethernet 1 protocol.

```
Device#mpls ether-filter ethernet-I forward
```

Block Ethernet 1 protocol using CLI

Use the **mpls ether-filter ethernet-I block** command to block the Ethernet 1 protocol.

```
Device#mpls ether-filter ethernet-I block
```

Verify Ethernet 1 allowed Ethertypes using CLI

Use the **mpls** command to view the list of allowed Ethertypes from the Ethernet filter allow list.

```
Device#mpls
.
.
.
Ethernet Filter allow-list: 0x8892 0x8204 0x86dd, ethernet-I block
.
.
.
```

Note If Ethernet-I is enabled, the **mpls** show output is shown with **ethernet-I forward**.

Clear all detected Ethertypes using CLI

Use the **mpls ether-filter table clear** command to delete all the detected Ethertypes.

```
Device#mpls ether-filter table clear
```

Note The detection process works in background after clearing the detected Ethernet types.

Verify list of detected Ethertypes using CLI

Use the **mpls ether-filter table** command to view the list of detected Ethertypes from the Ethernet filter allow list.

```
Device#mpls ether-filter table
Ether-type Direction Description
0x8899     INGRESS   ---
0x86DD     INGRESS   IPv6
```