



## Layer 2 Mesh Transparency

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### 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

This task allows you to add Ethertypes to the allowed Ethernet list, enabling specific Ethernet frame types to pass through the filter configuration.

Use this procedure when you need to manage Ethernet frame filtering by adding specific Ethertypes to the allowed list. You can add both detected and undetected Ethertypes through the URWB configurator interface.

#### Before you begin

Follow these steps to add an Ethertype to the allowed Ethernet list using the 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.

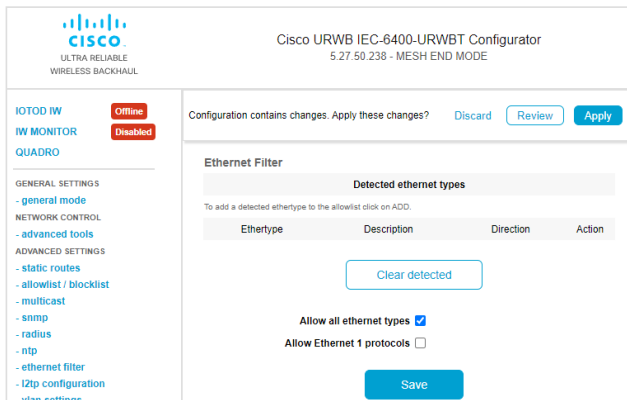
## Allow all ethertypes to the allow list using GUI

This task allows all Ethernet types to pass through the gateway by enabling the allow all ethernet types option in the Ethernet Filter configuration.

Use this procedure when you need to configure the gateway to accept all Ethernet frame types without filtering. This setting is typically used when broad network compatibility is required.

### 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

Clear all allowed Ethertypes from the allowed Ethernet list to reset the filtering configuration.

Use this procedure when you need to remove all previously configured allowed Ethertypes from the gateway's Ethernet filter SETTINGS through the web interface.

### Before you begin

Follow these steps to clear the 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

Delete all detected Ethertypes from the detected Ethernet types list to maintain a clean configuration and remove previously identified network traffic types.

Use this procedure when you need to clear the detected Ethernet types list that has accumulated detected Ethertypes over time. This operation removes all entries from the detected list, allowing for a fresh start in Ethernet type detection.

#### Before you begin

Follow these steps to delete the list of detected Ethertypes in the detected Ethernet list using the GUI:

#### Procedure

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- 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.
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## Manage ethernet 1 protocols using GUI

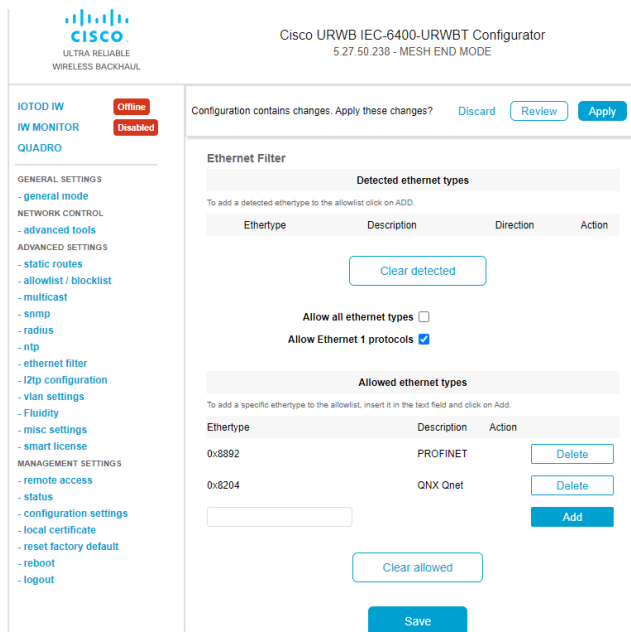
Enable Ethernet 1 protocols on the gateway to allow specific network traffic filtering and protocol management through the web-based configuration interface.

Use this procedure when you need to enable Ethernet 1 protocol filtering on your URWB gateway. The configuration is performed through the web-based GUI configurator and requires a system reboot to take effect.

#### Procedure

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- 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 ethernet type to the allow list using CLI

Add a specific Ethernet type to the allow list to control which Ethernet frame types are permitted.

Use this procedure when you need to configure MPLS Ethernet filtering by adding specific Ethernet values to the allow list.

#### Procedure

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

#### Example:

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

### Delete an ethernet type from the allow list using CLI

Remove a specific Ethernet type from the MPLS Ethernet filter allow list to control which Ethernet frame types are permitted.

Use this procedure when you need to remove an EtherType that is no longer required in the allow list configuration.

### Procedure

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

#### Example:

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

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## 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
.
.
```



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

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## Clear all ethertypes from the allow list using CLI

This task removes all detected and allowed EtherTypes from the allow list to reset the filter configuration.

When you need to clear the current allow list configuration and start fresh, use this command to remove all previously detected and allowed EtherTypes.

### Procedure

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

#### Example:

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

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## 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
.
.
.

```




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

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## 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

```




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

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## 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
.
```



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

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## Clear all detected ethertypes using CLI

This task deletes all detected Ethertypes from the device to reset the detection table.

The MPLS Ethernet filter maintains a table of detected Ethertypes during normal operation. Clearing this table may be necessary for troubleshooting or maintenance purposes.

### Procedure

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

#### Example:

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

#### Note

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

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## 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
```

■ Verify list of detected ethertypes using CLI