

# Mesh Monitor

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## User's Manual



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# *1.* Introduction

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Thank you very much for purchasing the Mesh Monitor utility.

## 1-1. Introduction

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This manual provides information on how to configure and use the Mesh Monitor.

### Disclaimers

- The unauthorized transfer or copying of the content of this manual, in whole or in part, without prior written consent is expressly prohibited by law.
- The content of this manual is subject to change without notice.
- This manual was prepared to accurately match the content of each OS, but the actual information shown on the computer monitor may differ from the content of this manual due to future OS version upgrades, modifications, and other changes.
- Although every effort was made to prepare this manual with the utmost accuracy, Silex Technology will not be held liable for any damages as a result of errors, setting examples, or other content.

### Trademarks

- AMC Manager is a registered trademark of Silex Technology.
- Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.
- Other company names and product names contained in this manual are trademarks or registered trademarks of their respective companies.

## 2. What is Mesh Monitor?

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This chapter describes an outline of Mesh Monitor and the installation procedure.

Mesh Monitor is one of the plugin utilities of AMC Manager®, the unified management software for Silex devices. Mesh Monitor collects information of Silex's Mesh networking products (hereafter Mesh devices) to visualize the Mesh routes.

Mesh Monitor is capable of disabling the route setting, configuring some settings of Mesh devices, and recording the connection status and route change to help with the management of Mesh network.

Following Mesh devices supports Mesh Monitor.

- BR-400AN
- MNS-300EM

## 2-1. Mesh Monitor's Features

Mesh Monitor has the following features.

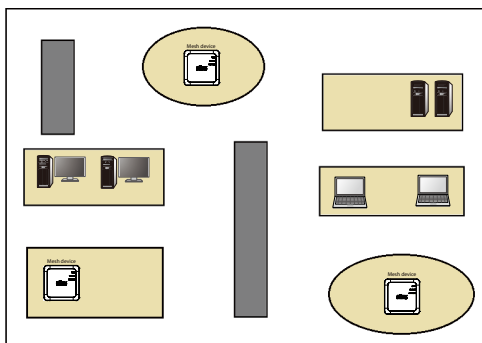
### Remote Operation and Monitoring

Mesh Monitor can check Mesh routes and the status of Mesh devices remotely, so that the users can investigate the network trouble remotely when it occurs.

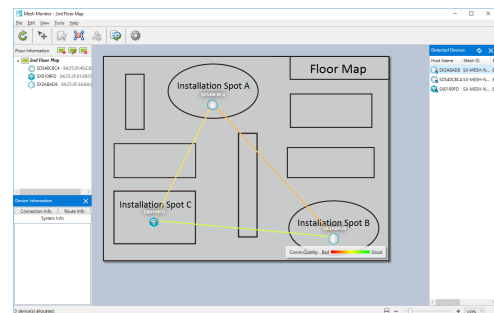
### Easy Visualization of Mesh Network

Mesh monitor supports to read an image file and it is possible to show the floor map image on Mesh Monitor. On the floor map, the Mesh devices can be located anywhere by dragging & dropping them. Actual Mesh network status can be visualized by uploading the floor map image file and allocating the Mesh devices on it.

#### Actual location of installation



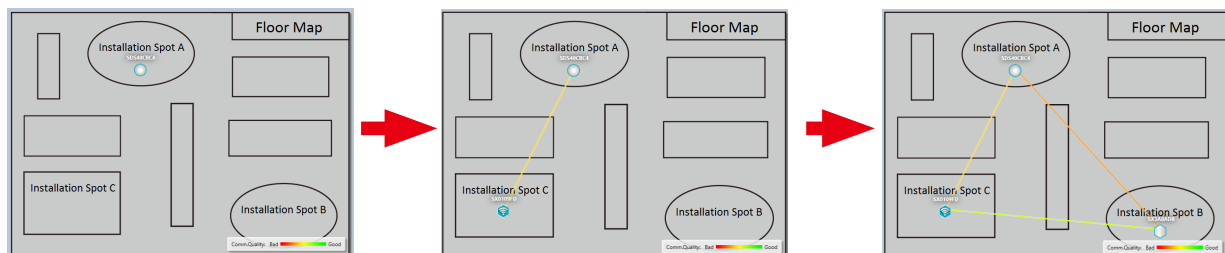
#### Display on Mesh Monitor



### Automatic Display of Routes to Mesh Devices

Mesh Monitor reads the route information from Mesh Devices, and draws lines to link Mesh devices based on that information.

In the Mesh network, whenever Mesh devices are installed on the floor, Mesh Monitor automatically shows the Mesh routes among the devices.





### Configuration of Mesh Functions

Mesh Monitor can configure a part of the Mesh functions, such as route optimization and Access Point functions, when a Mesh device is selected on the floor map.

### Route Control with Route Filter

Mesh Monitor can set filters to control communication routes for Mesh devices. Once the filter is enabled on the Mesh route, the Mesh route cannot be used until the filter is disabled. This filter function can be used to prevent the Mesh route from being switched frequently.



- MNS-300EM does not support the route filter function.

**TIP**

### Different Icons for Each Type of Mesh Devices

To show BR-400AN and MNS-300EM on Mesh Monitor, a different icon is used for each.



- Even if the Mesh devices are physically moved, the location on Mesh Monitor does not change automatically.

**TIP**

## 2-2. Mesh Monitor's Operating Environment

The operating environment is as follows.

Name	Details
OS	Microsoft Windows 10 (32/64bit) Microsoft Windows 8.1 (32/64bit) Microsoft Windows 8 (32/64bit) Microsoft Windows 7 SP1 (32/64bit) Microsoft Windows Server 2016 Microsoft Windows Server 2012 R2 Microsoft Windows Server 2012 Microsoft Windows Server 2008 R2
Languages	Japanese English
Environment	.NET Framework 4.5 or newer
Supported AMC Manager®	AMC Manager® Ver. 3.9.0 or newer
Supported devices	BR-400AN, MNS-300EM
Registrable floors	Max. 8 floors
Devices per floor	Max. 32 devices



- The AMC Manager® runs as a classic desktop application on Windows 8 or newer.
- Windows RT is not supported.
- To show MNS-300EM, AMC Manager® Ver 3.3.0 or newer is necessary.

## 2-3. Installing Mesh Monitor

This section describes how to install Mesh Monitor.

For installation, a license key is required that was issued on the purchase.



- The license keys for AMC Manager® and AMC Manager® E model are different from the one for Mesh Monitor and will not work for this installation.
- Install AMC Manager® first before installing Mesh Monitor.

### Installing Mesh Monitor

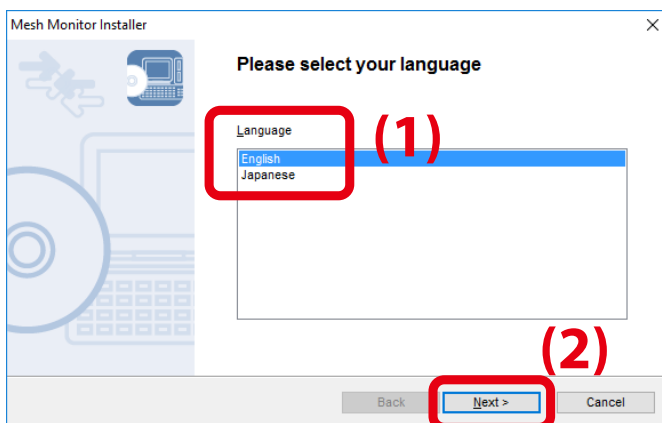
1. Double-click **Setup.exe** of the Mesh Monitor on your PC.



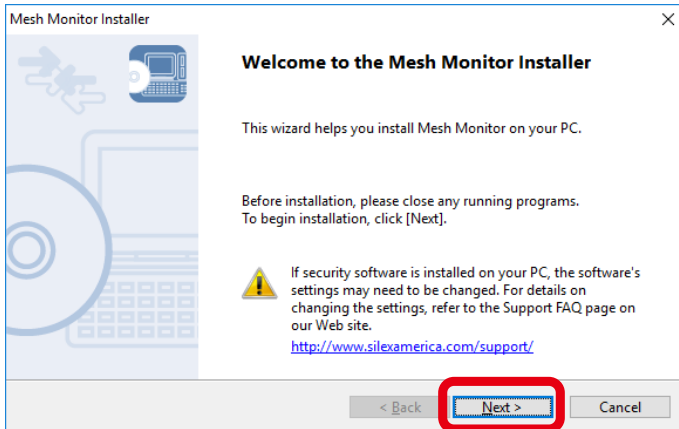
#### Note

- When the user account control is enabled on your PC, the **User Account Control** screen is displayed (the screen may differ depending on your OS). If it is displayed, click **Continue** or **Yes**.

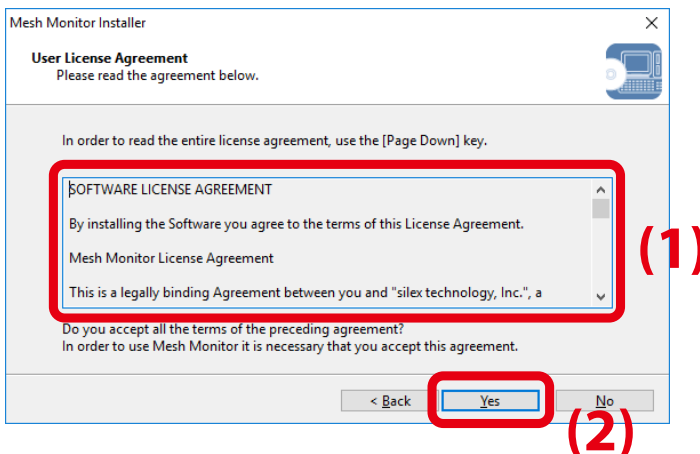
2. Select a language and click **Next**.



**3. Click Next.**

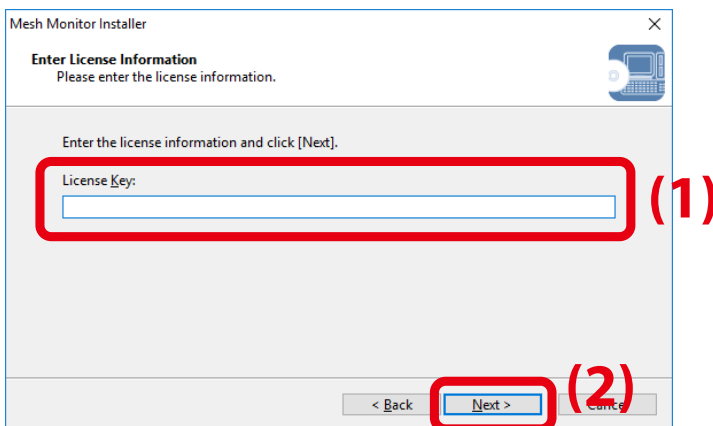


**4. Read the software license notes and click Yes when you agree with the terms and conditions.**

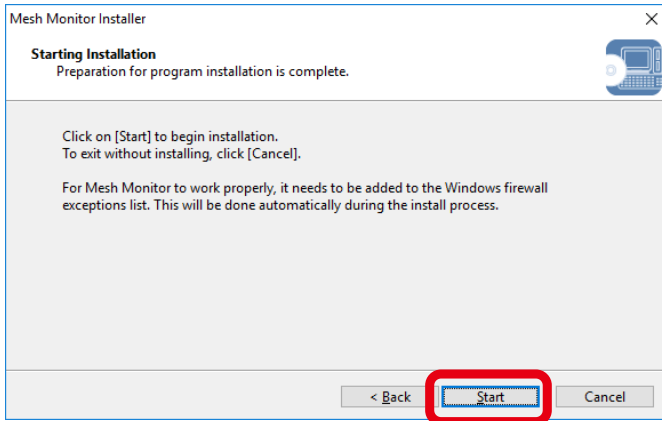


**5. Enter the license key and click Next.**

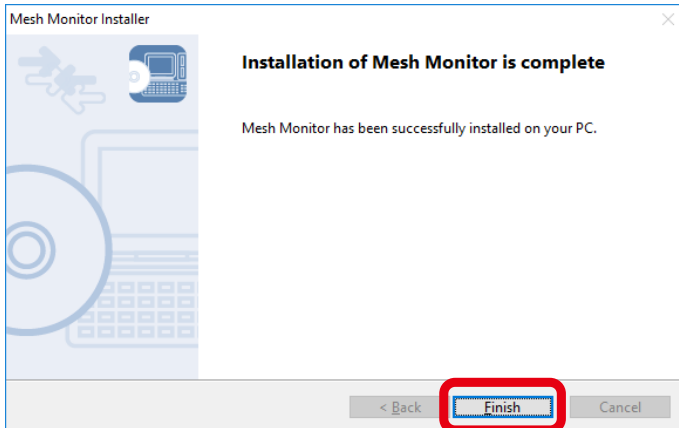
If Mesh Monitor has been installed in your PC, this screen will not appear.



**6.** Click **Start** to start the installation.



**7.** Click **Finish**.



Blank page

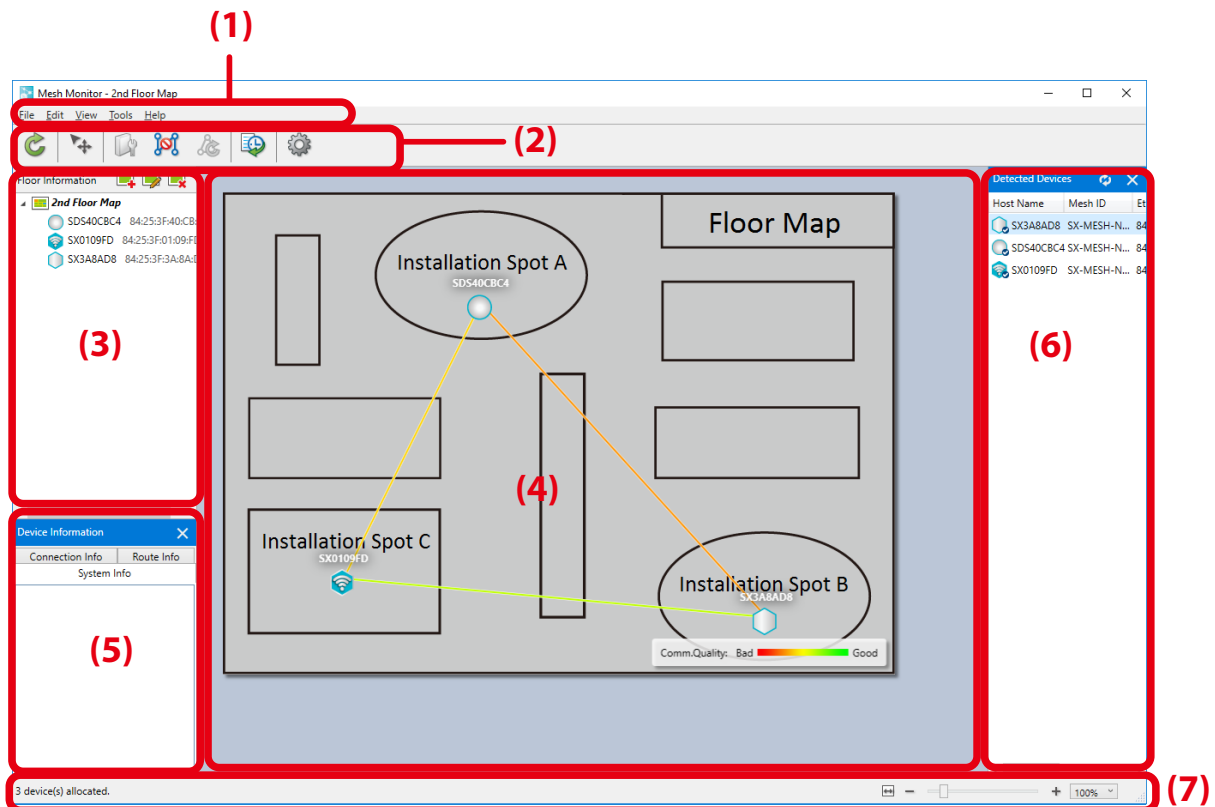
# 3. Window and Menu

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This chapter explains Mesh Monitor's operation window.

## 3-1. Main Window

The main window provides the functions such as adding floor information, showing the discovered Mesh devices and the route information on a floor image, and checking with the connection status and Mesh route setting.



### (1) Menu bar

Shows a menu to execute Mesh Monitor's functions such as adding floors and configuring Mesh devices.

### (2) Tool bar

Shows icons of Mesh Monitor functions such as Mesh device settings.

### (3) Floor information

Shows the registered floor map and the Mesh devices allocated on it.



**(4) Floor map**

Shows the selected floor map as a background image. This map displays the Mesh devices and their route settings.

**(5) Device information**

Shows the detailed information of Mesh devices selected on the floor information or floor map.

**(6) List of detected devices**

Shows a list of the detected Mesh devices.

**(7) Status bar**

Shows the operation status of Mesh devices.

**Menu Bar**

Shows Mesh Monitor functions such as adding floors and configuring Mesh device settings.

File Edit View Tools Help








Menu	Name	Details	
File	Import Floor Information...	Imports floor maps and the location information of Mesh devices from a file. If the floor information with a same name has already been registered, it is replaced with the imported information.	
	Export Floor Information...	Exports the floor map and the location information of Mesh devices to a file.	
	Refresh	Retrieves the Mesh device information and updates the status.	
	Exit	Quits the Mesh Monitor.	
Edit	Add Floor...	Adds the floor information.	
	Edit Floor...	Edits the floor information.	
	Remove Floor...	Deletes the floor information.	
	Move Device	Allows Mesh devices to be relocated on the floor map. Selecting this item switches the movability status of Mesh devices between 'movable' and 'immovable'.	
	Remove Device	Deletes the selected Mesh device from the floor and the floor map.	
View	Signal Strength	Shows or hides the radio intensity on the floor map. Selecting this item shows or hides the display.	
	Detected Device	Shows or hides the device list. Selecting this item shows or hides the display.	
	Device Info	Shows or hides the device information. Selecting this item shows or hides the display.	
	Zoom	Zoom out	Enlarges the floor map.
		Zoom in	Reduces the floor map.
		Fit to Window Width	Automatically adjusts the size of the floor map according to the window width. This adjustment will not take place when the size is manually changed or the floors are switched.
		400%	The floor map will be displayed on the selected scale.
		300%	
		250%	
		200%	
		175%	
		150%	
		125%	
100%			
75%			
50%			

Menu	Name	Details
Tools	Device Configuration...	Shows the device configuration window of the selected Mesh device.
	Route Filter	Turns on/off the editing mode of the route filter.
	Route Refresh	Optimizes the Mesh route on the selected Mesh device.
	Mesh Information Record	Shows the route change and status transition of the floor.
	Option...	Opens the option window.
Help	Silex Homepage	Opens the Silex's homepage.
	About Mesh Monitor	Shows the version information.

### Tool Bar

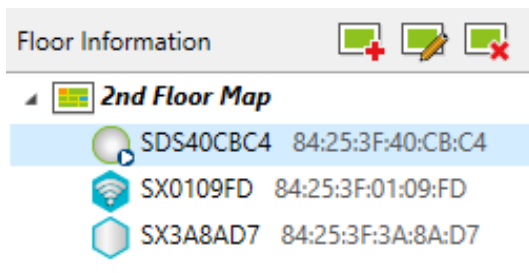
Executes Mesh Monitor functions such as configuring Mesh device settings and controlling Mesh routes.



Icon	Name (Tooltip)	Details
	Refresh	Retrieves the Mesh device information and updates their status.
	Move Device	Allows Mesh devices to be relocated on the floor map. Selecting this item switches the movability status of Mesh devices between 'movable' and 'immovable'.
	Device Configuration...	Shows the device configuration window of the selected Mesh device.
	Route Filter	Turns on/off the editing mode of the route filter.
	Route Refresh	Optimizes the Mesh route on the selected Mesh device.
	Mesh Information Record	Shows the route change and status transition of the floor.
	Option	Opens the option window.

## Floor Information

Shows a list of floors and Mesh devices on the floors.



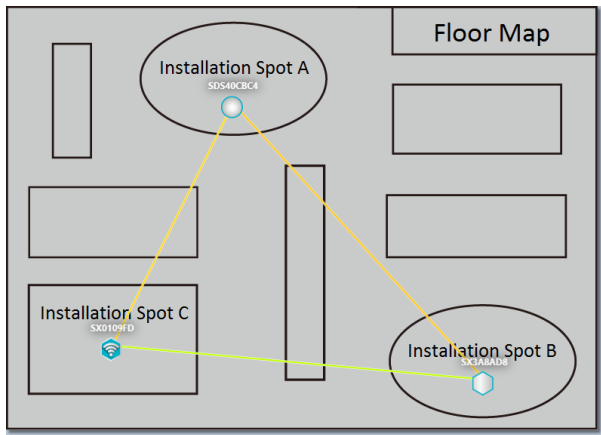
Icon	Name (Tooltip)	Details
	Add Floor...	Adds the floor information.
	Edit Floor...	Edits the floor information.
	Remove Floor...	Deletes the floor information.
	Remove Device	Deletes a device when <b>Move Device</b> is on.

The icons of Mesh devices are as follows.

Icon	Details
	Mesh device is operating.
	Access Point function is enabled.
	MNS-300EM is operating.
	MNS-300EM is operating as a wireless client device.
	This is the Mesh device being selected.
	Network error is occurring.
	Mesh device is not detected.

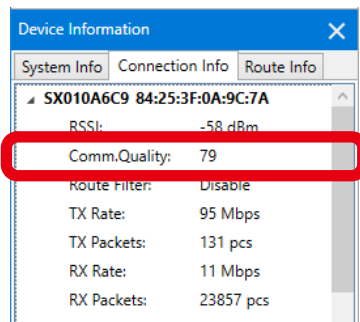
## Floor Map

Shows the selected floor map image and the Mesh devices on it. When the Mesh device is not selected, colored lines are displayed that represent the route among the Mesh devices.



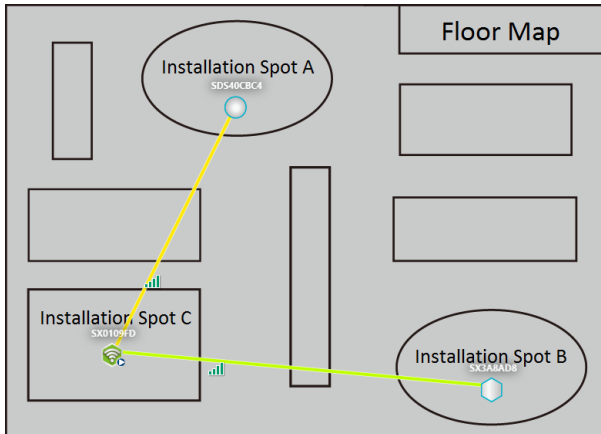
### Note

- The communication quality of the connected Mesh devices are compared, and the one with a higher value will be displayed as a line.
- When the Mesh device is not selected, the communication quality level can be checked at **Connection Info** of **Device Information**. A smaller value represents better quality.



When the route filter is OFF and the Mesh device is not selected, only the route of the Mesh device is displayed. The lines are hidden when they are not used for the route.

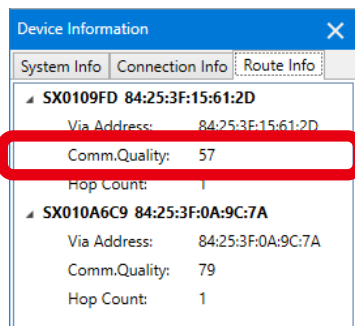
When a Mesh device is selected, the map will show the route and connection lines from that device to other Mesh devices with the radio intensity.



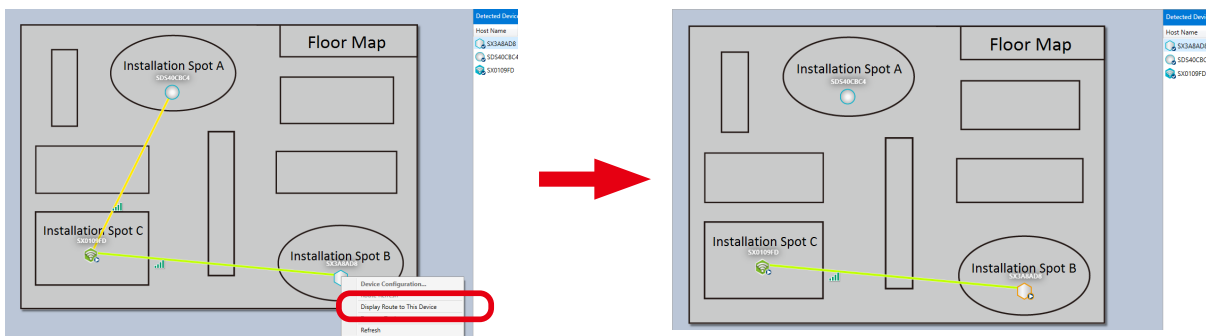
- When **Move Device** is on, selecting a Mesh device will not display Mesh routes.
- Colors of unused routes are half transparent.

**Note**









- When the Mesh device is selected, the communication quality level can be checked at **Route Info** of **Device Information**.



When a Mesh device is selected and the other Mesh device is right-clicked and **Display Route to This Device** is clicked from the context menu, the route from the selected Mesh device is displayed.







The icons of Mesh devices are as follows.

Icon	Details
	Mesh device is operating.
	Access Point function is enabled.
	MNS-300EM is operating.
	MNS-300EM is operating as a wireless client device.
	Mesh device is selected.
	<b>Display Route to This Device</b> is on for the Mesh device.
	Network error is occurring.
	Mesh device is not detected.

The following shows the radio intensity.

The radio intensity varies according to RSSI value. The more green bars it shows, the better communication quality it has.

Icon	Details
	RSSI value > -40 dBm
	-65 dBm < RSSI value ≤ -40 dBm
	-80 dBm < RSSI value ≤ -65 dBm
	RSSI value ≤ -80 dBm

The meaning of color bar is as below.

The communication quality changes the color of lines between Mesh devices. When the connection has a higher transmission rate and stable communication, the color bar will be green.

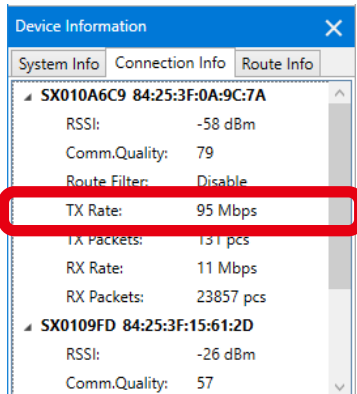










- The color bar of communication quality can be hidden or shown from the option configuration window. For the details, refer to **5-6. Changing Mesh Monitor Settings**.

**Note**

- The transmission rate can be checked at **Connection Info** of **Device Information**.



The color of lines connecting each Mesh device and the values of communication quality are as follows. The value closer to 1 will have the better communication quality.

Line colors	Network mode	Details
 (Grey)	Common	Unused route or communication quality is uncalculated.
 (Green)	802.11b/g	1 ≤ Communication quality ≤ 458
	802.11n/b/g 20MHz	1 ≤ Communication quality ≤ 105
	802.11n/b/g 40MHz	1 ≤ Communication quality ≤ 50
	802.11a	1 ≤ Communication quality ≤ 458
	802.11n/a 20MHz	1 ≤ Communication quality ≤ 105
	802.11n/a 40MHz	1 ≤ Communication quality ≤ 50
 (Colors representing communication quality)	802.11b/g	459 ≤ Communication quality ≤ 688
	802.11n/b/g 20MHz	106 ≤ Communication quality ≤ 688
	802.11n/b/g 40MHz	51 ≤ Communication quality ≤ 688
	802.11a	459 ≤ Communication quality ≤ 918
	802.11n/a 20MHz	106 ≤ Communication quality ≤ 918
	802.11n/a 40MHz	51 ≤ Communication quality ≤ 918
 (Red)	802.11b/g	689 ≤ Communication quality
	802.11n/b/g 20MHz	
	802.11n/b/g 40MHz	
	802.11a	919 ≤ Communication quality
	802.11n/a 20MHz	
	802.11n/a 40MHz	
 (Grey)	A route filter is enabled on the route.	
 (Colors representing communication quality)	A route filter is enabled on the route for one-way only.	



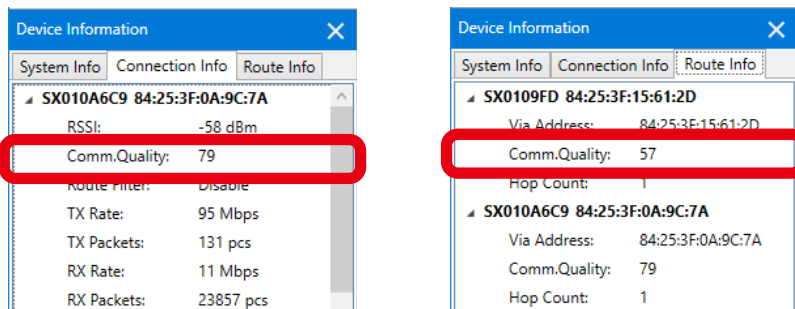


- As the communication quality value increases, wireless data may not reach the destination properly. The transmission may be improved by installing more Mesh devices or shortening the distance between devices.



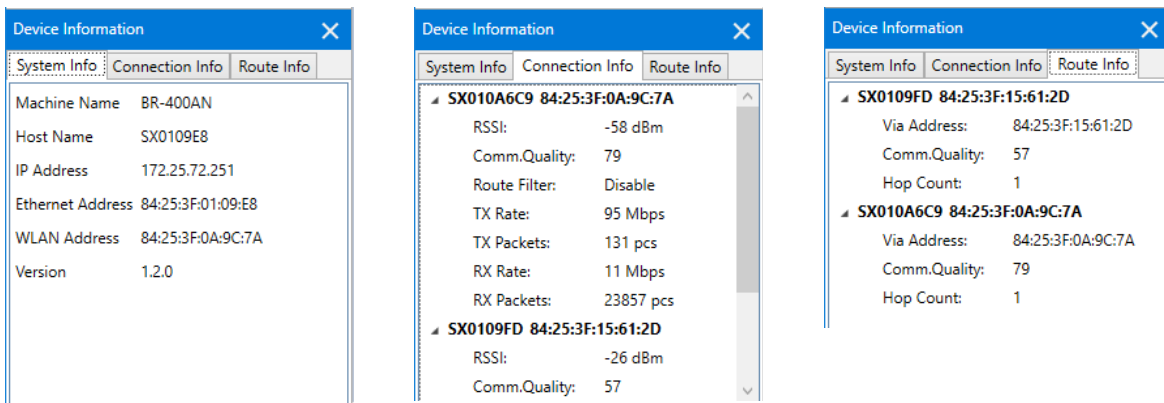
**Note**

- The network mode is a combination of the **Wireless Mode** and **Channel Bandwidth** settings of the Mesh device.
- Between two Mesh devices, the line of the one with better communication quality is always displayed.
- Example) When the values of communication quality are "100" for communication from Mesh device A to B and "200" for communication from Mesh device B to A, the communication quality will be 200 and the line color will be orange.
- The value of communication quality can be checked at **Connection Info** of **Device Information** or **Route Info** of **Device Information**.



**Device Information**




Shows information of the Mesh device selected on the floor information or floor map in 3 categories: **System Info**, **Connection Info** and **Route Info**.







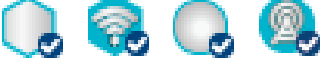
Name	Details
System Info	Shows Mesh device's basic information (model, Ethernet address, etc.)
Connection Info	Shows information of the connected Mesh devices in the Mesh network.
Route Info	Shows Mesh route information.

## Device List

Shows a list of the discovered Mesh devices.

Detected Devices			
Host Name	Mesh ID	Ethernet Address	WLAN Address
 SX3A8AD7	SX-MESH-NET	84:25:3F:3A:8A:D7	84:25:3F:43:73:CE
 SDS40CBC4	SX-MESH-NET	84:25:3F:40:CB:C4	84:25:3F:48:1B:C0
 SX0109FD	SX-MESH-NET	84:25:3F:01:09:FD	84:25:3F:15:61:2D

The icons of Mesh device are as follows.

Icon	Details
	Access Point function is enabled.
	Access Point function is disabled.
	MNS-300EM is operating.
	MNS-300EM is operating as a wireless client device.
	The device is installed on the floor map.

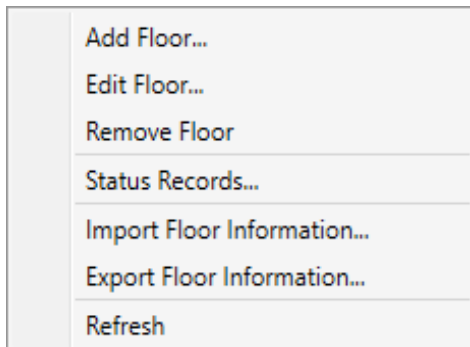


- Mesh Monitor uses the search setting of AMC Manager®.

### Note

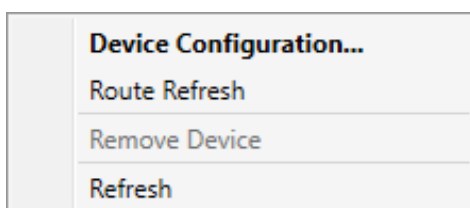
## Context Menu

Right-clicking on the floor information shows the following context menu.



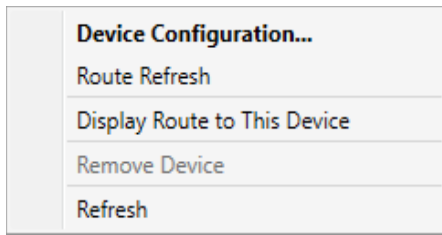
Name	Details
Add Floor...	Adds the floor information.
Edit Floor...	Edits the floor information.
Remove Floor	Deletes the floor information.
Status Records...	Shows the route change and status transition of the floor.
Import Floor Information...	Imports floor maps and the location information of Mesh devices from a file. If the floor information with a same name has already been registered, it is replaced with the imported information.
Export Floor Information...	Exports the floor map and the location information of Mesh devices to a file.
Refresh	Retrieves the Mesh device information and updates the status.

When the Mesh device is right-clicked on the floor information, the following context menu is displayed.



Name	Details
Device Configuration...	Shows the device configuration window of the selected Mesh device.
Route Refresh	Optimizes the Mesh route on the selected Mesh device.
Remove Device	Deletes the selected Mesh device when <b>Move Device</b> is on.
Refresh	Retrieves the Mesh device information and updates the status.

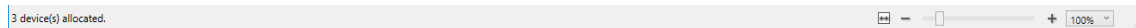
Right-clicking on a Mesh device on the floor map shows the following context menu.



Name	Details
Device Configuration...	Shows the device configuration window of the selected Mesh device.
Route Refresh	Optimizes the Mesh route on the selected Mesh device.
Display Route to This Device	This menu will become available when you select a Mesh device and then right-click another device on the floor map. This shows Mesh route from the selected Mesh device to the right-clicked device.
Remove Device	Deletes the selected Mesh device when <b>Move Device</b> is on.
Refresh	Retrieves the Mesh device information and updates the status.

### Status Bar

Shows the floor information such as how many devices are on the floor map and which devices are selected. It is possible to enlarge or reduce the floor map from the status bar.



Name	Details
	Automatically adjusts the size of the floor map according to the window width. This adjustment will not take place when the size is manually changed or the floors are switched.
	Reduces the floor map.
	Move the slider left or right to adjust the display scale.
	Enlarges the floor map.
	Shows the display scale in use. Click here to select the display scale from the following range. 400% / 300% / 250% / 200% / 175% / 150% / 125% / 100% / 75% / 50%

## 3-2. Device Configuration Window

Some functions of Mesh device can be configured on Mesh Monitor.

The available setting will vary depending on each Mesh device.

BR-400AN's configuration window

MNS-300EM's configuration window

Name		Details
Host Name		Shows the host name of Mesh device.
Enable Route Refresh Function	-	Enables/Disables the route refresh function for Mesh device. Check this check box to configure the route refresh method and interval.
	Route Refresh Method	Chooses the route refresh method. * The selectable refresh methods depend on the Mesh device.
	Route Refresh Interval	Specifies the route refresh interval. *This range depends on the Mesh device.
Enable Access Point Function		Enables/Disables the Access Point function. Check this check box to enable this function.
Enable Loop Avoidance		Enables/Disables the network loop avoidance function. Check this check box to enable this function.
[OK] button		Sends the settings to the Mesh device.
[Cancel] button		Closes the device configuration window.



- In regard to the Access Point function, Mesh Monitor cannot configure SSID, authentication and encryption methods. To configure them, use the AMC Manager® or the Web pages of Mesh device.

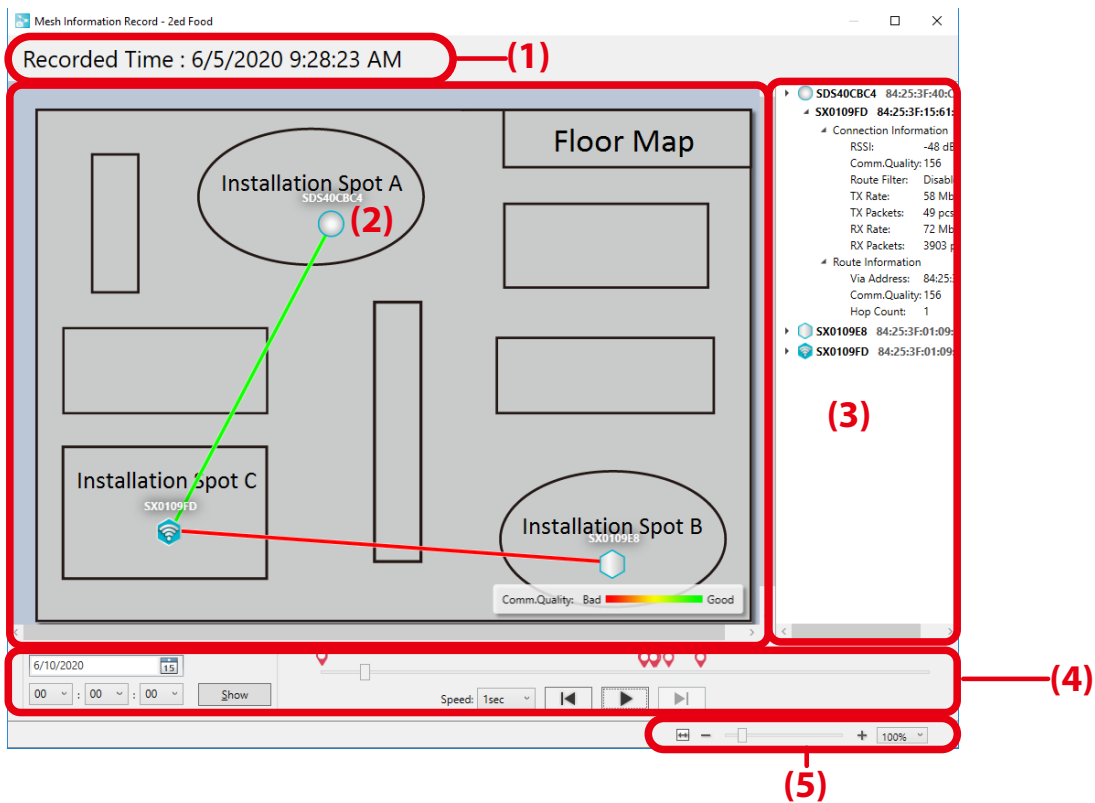


### Note

- The device configuration window shows the current setting of the Mesh device.
- The setting items may vary on each Mesh device.

## 3-3. Mesh Information Record Window

Mesh Monitor records Mesh routes for each floor and status changes of each Mesh device. In the Mesh information record window, the record of the past events can be checked. When a Mesh device has a network error or is disconnected from other Mesh device, Mesh Monitor will record it as an error event and show it on the slider with a marker.



### (1) Recorded time

Shows the date and time of the record. Move the slider next to the operation buttons to change the date and time of the record.

### (2) Floor map

Shows the floor map and Mesh routes as of the recorded time. Click a device on the floor map to see the Mesh routes and the radio intensity.

**(3) Detailed information**

Shows the detailed information of each Mesh device as of the recorded time in a tree view. The information includes the connected Mesh devices and the Mesh route information. When the Access Point function is enabled on the Mesh device, information of the wireless stations connected to that device is also displayed.

Error events and the information are shown in red.

**(4) Buttons**






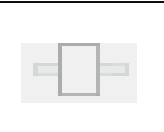
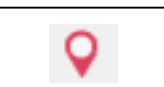
Changes the date and time to display the records.

**(5) Status bar**

Enlarges or reduces the floor map.

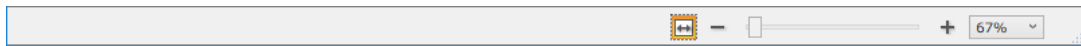
**Buttons**





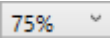
Use the buttons to change the display of Mesh information records.

Icons	Name	Details
	Date and time	Sets the playback position by specifying the date and time and clicking <b>Show</b> . If the date/time earlier than the first recording date is specified, the information of the first recording date will be displayed. If the date/time later than the last recording date is specified, the information of the last recording date will be displayed.
	Speed	Chooses the speed to move ahead or back the records.
	Go back to previous error	Moves back to the previous record when an error event exists on that record.
	Move to next error	Moves ahead to the next record when an error event exists on that record.
	Play	Shows the records at the specified speed.
	Slider	Shows the position where the record exists in an entire time frame. Move the slider to change the date and time to display.
	Event marker	Shows the time position of error events.

### Status Bar

Enlarges/reduces the floor map. The default value is same as the display scale of the main window. How to enlarge or reduce the floor map is explained as follows.

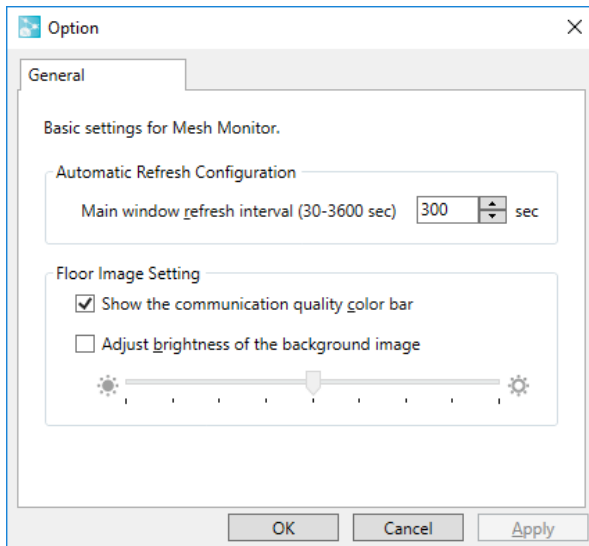


Name	Details
	Automatically adjusts the size of the floor map according to the window width. This adjustment will not take place when the size is manually changed.
	Reduces the floor map.
	Move the slider left or right to adjust the display scale.
	Enlarges the floor map.
	Shows the display scale in use. Click here to select the display scale from the following range. 400% / 300% / 250% / 200% / 175% / 150% / 125% / 100% / 75% / 50%



## 3-4. Option Window

The refresh interval and floor map display settings can be configured.



Name	Details	Default Value
Main window refresh interval	Sets the interval to refresh the status information of each Mesh device. Choose the interval from 30 to 3600 seconds.	300
Show the communication quality color bar	Shows/Hides the color bar to show the communication quality on the floor map. Check the check box to show the color bar.	ON
Adjust brightness of the background image	Configures the brightness of the floor map. Check this check box to enable the slider for the brightness adjustment. By changing the brightness of the floor map, the route information (e.g. Mesh route lines) can be highlighted on the floor map.	OFF
[OK] button	Save the settings and closes the option window.	-
[Cancel] button	Closes the option window without saving the settings.	-
[Apply] button	Saves the settings.	-

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# 4. How to Use Mesh Monitor

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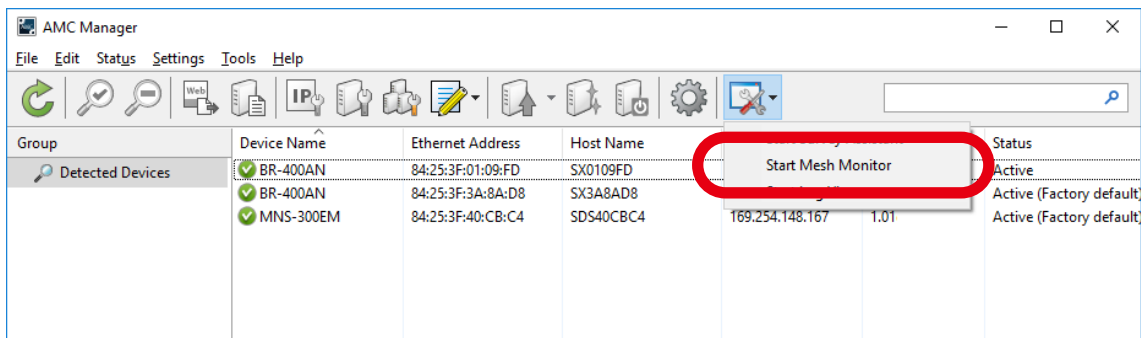
This chapter describes how to allocate Mesh devices and display the route information on Mesh Monitor.

## 4-1. Starting Mesh Monitor

How to start Mesh Monitor is explained.

Mesh Monitor is a special plug-in utility of AMC Manager® and does not run without AMC Manager®.

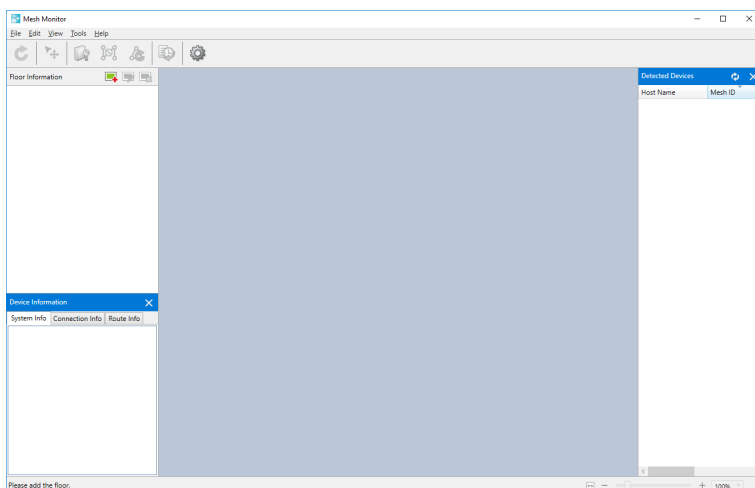
1. Start AMC Manager® and click the icon **Start the plug-in tools** in the tool bar and choose **Start Mesh Monitor**.



**Note**

- Mesh Monitor can also be started by the following method:
- Click **Tools - Start Mesh Monitor** in the menu bar.

2. Mesh Monitor will start.



## 4-2. Creating a Floor

The following explains how to create a floor at which you can allocate the Mesh devices. If a sketch of the room layout or a map of the floor where devices are installed is used as a background image, actual environment can be simulated on Mesh Monitor.



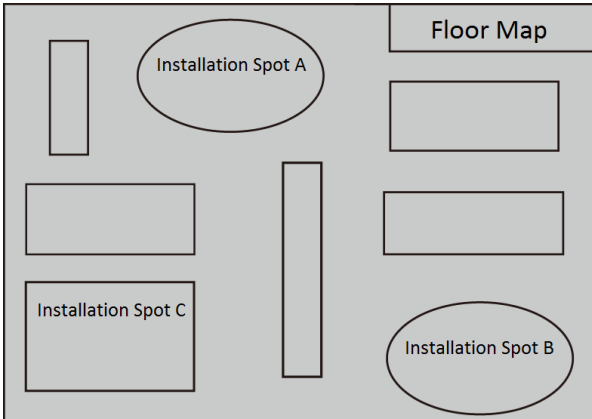
- Up to 8 floors can be registered.

**Note**

### Preparation

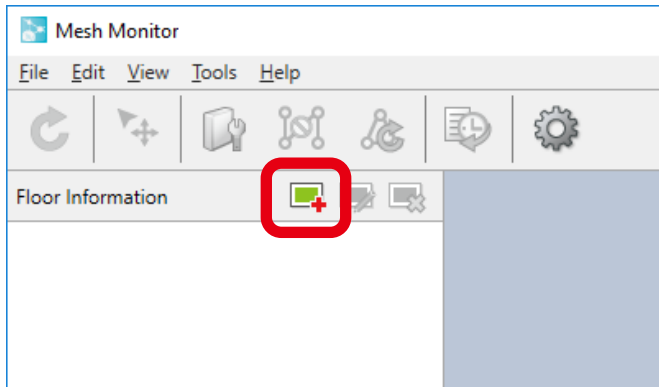
Prepare a background image to use as the floor map. Supported file formats are PNG, JPG and BMP.

#### Example of Background Image



## Creating a Floor

1. Click the icon **Add floor**.



- A floor can also be created by the following methods.

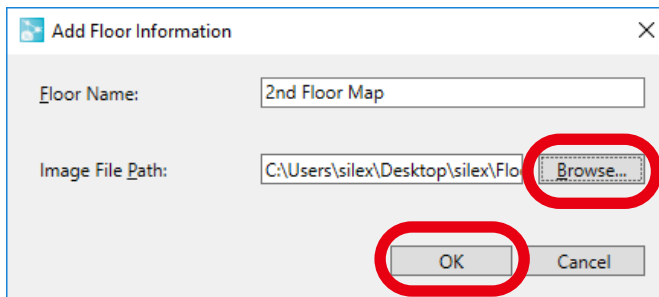
- Click **Edit - Add Floor** from the menu bar.

**Note**

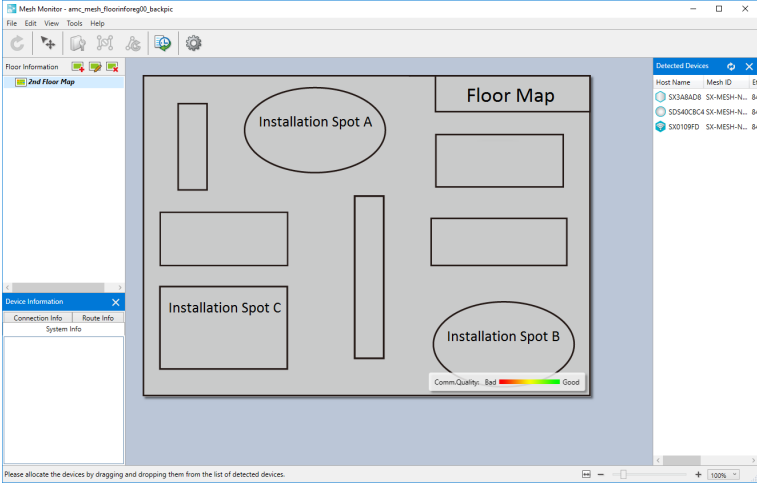
- Right-click on the floor information and select **Add Floor** from the context menu.

2. The Add Floor Information window is displayed.

Type a name of floor to create, click **Browse** to choose a background image file, and then click **OK**.



- 3. A floor is created.  
The specified background image is shown as floor map.



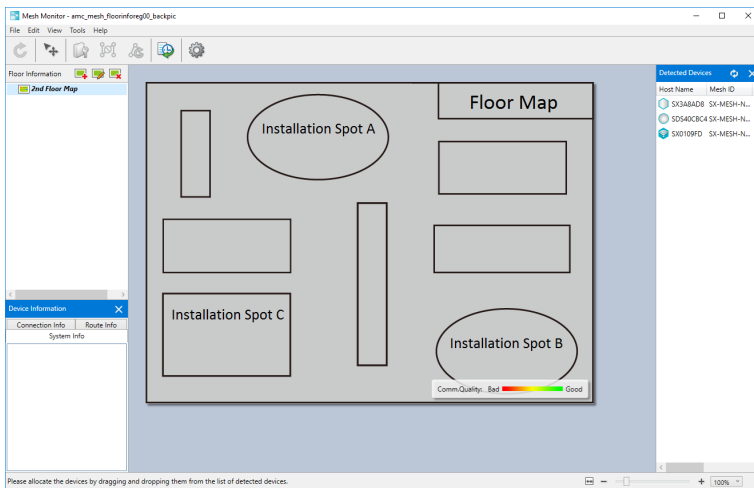
## 4-3. Allocating Mesh Devices

The following explains how to allocate Mesh devices on the created floor.

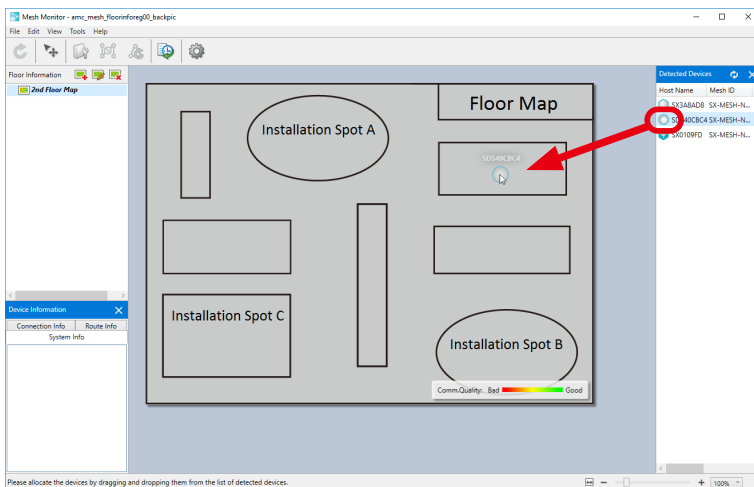


- To allocate Mesh devices on the floor map, proper communication must be established between the PC of Mesh Monitor and the Mesh devices.

1. Choose a floor at which you want to allocate the Mesh devices. The selected background image is displayed as a floor map.

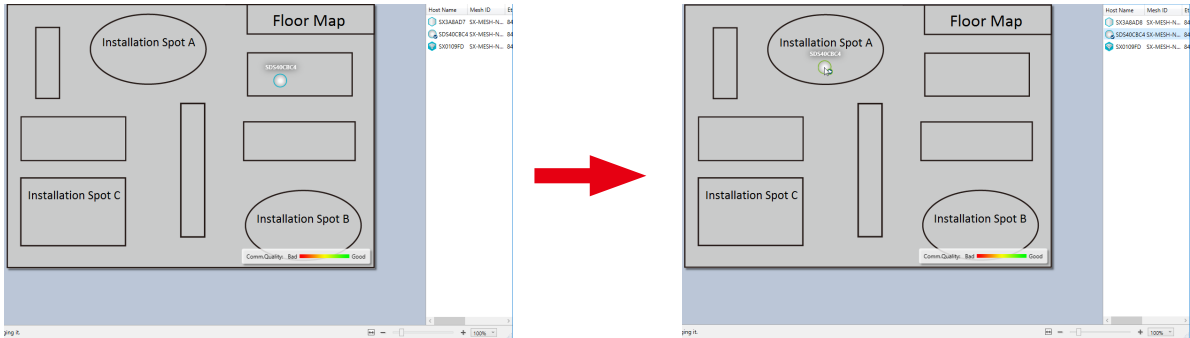


2. Drag and drop a Mesh device on the floor map from the device list.





- 3.** The device is allocated on the floor map.  
Drag and drop it again to change the position.

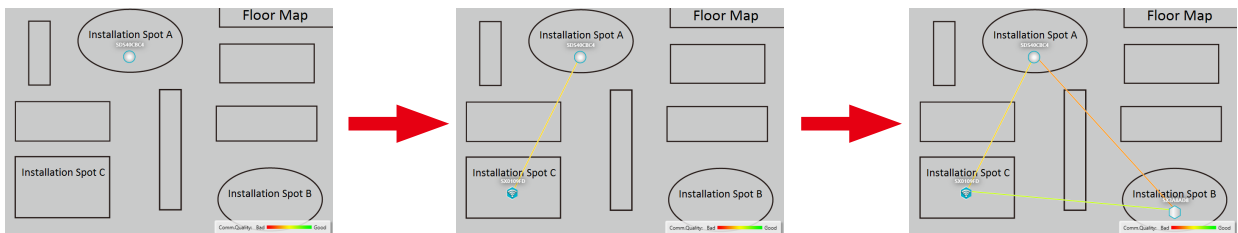


- After the Mesh device is allocated, movability of Mesh device is automatically enabled.
- The movability of Mesh device can also be enabled by the following method:

**Note**

- Click **Edit - Move Device** from the menu bar.

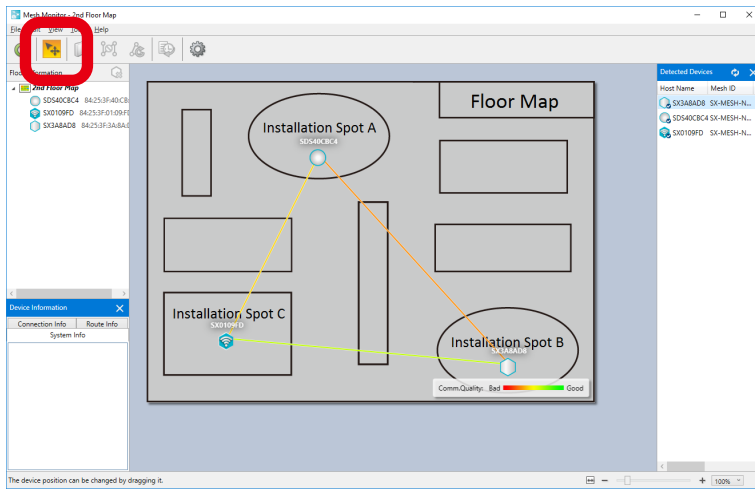
- 4.** Repeat **2 - 3** to allocate Mesh devices on the floor map.  
Every time when a Mesh device is allocated on the floor map, Mesh Monitor adds Mesh routes based on the information of that device.



- Up to 32 Mesh devices can be allocated per floor.
- It is possible to allocate a single Mesh device on multiple floors.

**Note**

5. Click the icon **Finish device move** to finish allocating the Mesh devices.

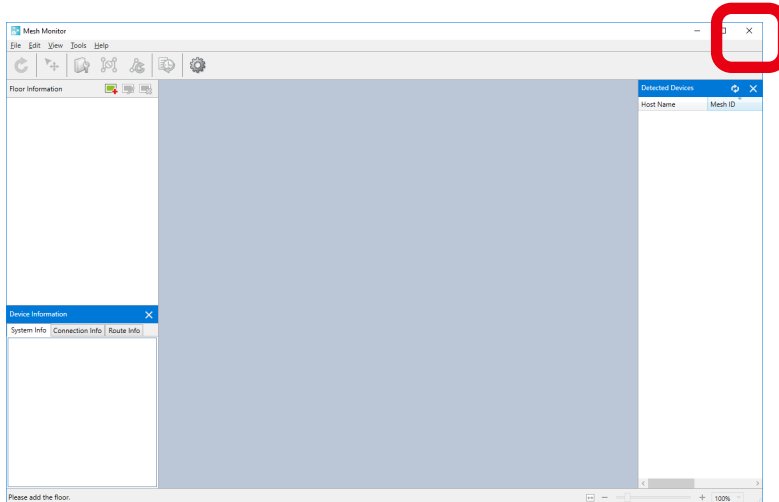


**Note**

- The device move can also be finished by the following method:
- Click **Edit - Move Device** from the menu bar.

## 4-4. Finishing Mesh Monitor

Click the close button (X button) on the top right corner of the window to finish Mesh Monitor.



### Note

- Mesh Monitor can also be finished by the following method:
  - Click **File - Exit** from the menu bar.
- When Mesh Monitor is finished, the floor information and Mesh device location of each floor are automatically saved. The saved information will be used to restore the floor information when Mesh Monitor is started next time.

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# 5. List of Functions

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This chapter describes functions of Mesh Monitor except for how to create a floor map and how to allocate Mesh devices.



- For details on the windows of each function, refer to **3. Window and Menu**.

## **Note**

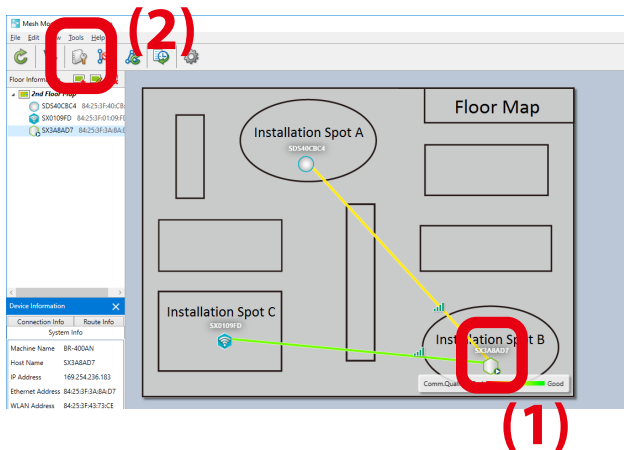
## 5-1. Configuring Mesh Device

The number of configurable functions are limited but it is possible to configure Mesh devices while checking with actual network status, which is impossible if AMC Manager® is used.



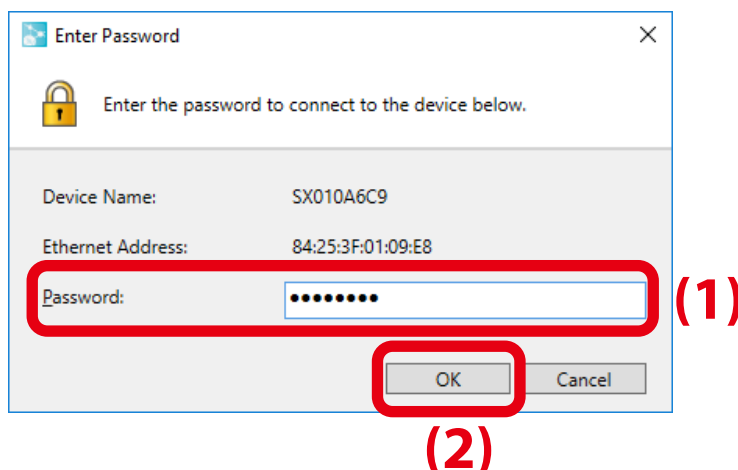
- When MNS-300EM is operating as a wireless client device, it cannot be configured using Mesh Monitor.

1. Select one Mesh device on the floor map (1), and click the icon **Device configuration** from the tool bar (2).

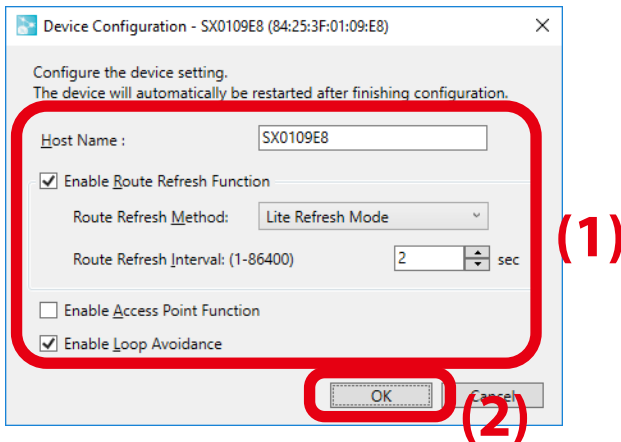


### Note

- Mesh device can also be configured by the following method:
- Select a Mesh device and click **Tools - Device Configuration** from the menu bar.
- Right-click on the selected Mesh device and choose **Device Configuration** from the context menu.
- When the selected Mesh device has a password, the following window will show up. Enter the password (1) and click **OK** (2).

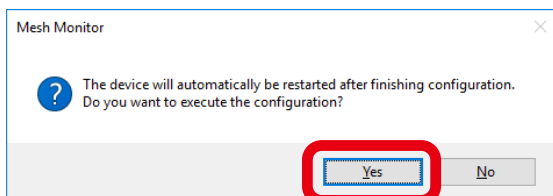


- The Device Configuration window appears.  
Edit the settings (1) and then click **OK** (2).

**Note**

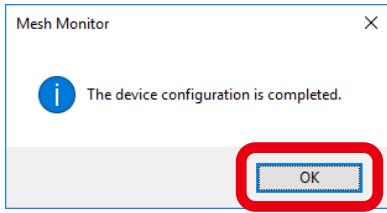
- For MNS-300EM, the host name (system name) and route refresh function can be set.

- A confirmation dialogue appears. Click **Yes**.

**TIP**

- If the Mesh device is restarted, the wireless connection is temporarily lost and Mesh route may be changed as a result.

4. The result of configuration change is displayed.  
Click **OK** to close the window.

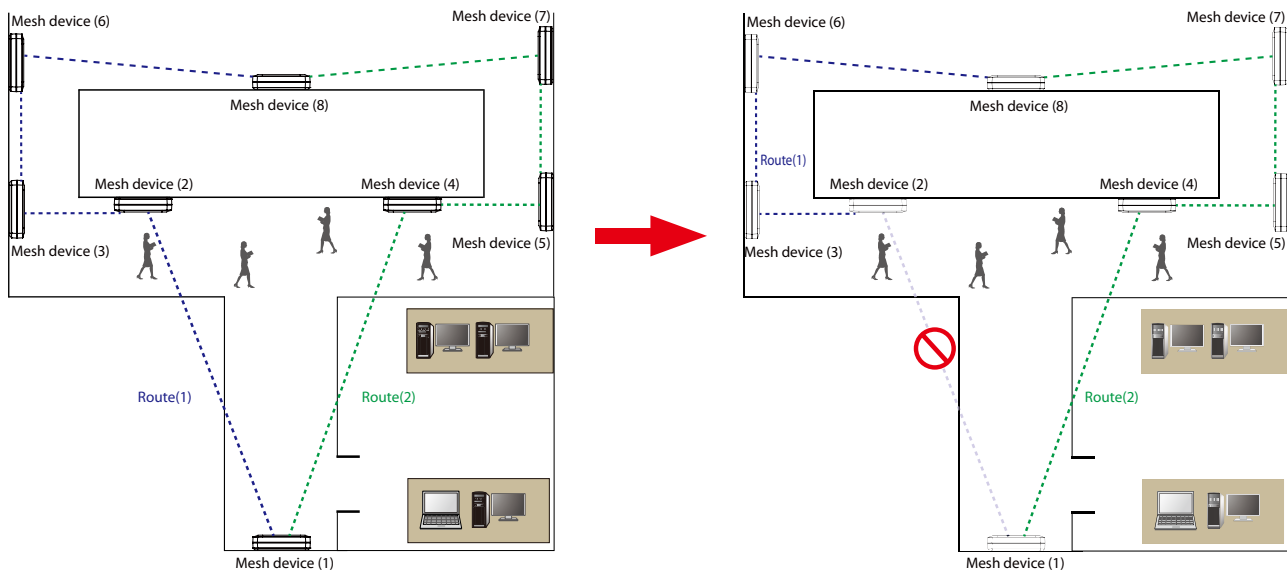




## 5-2. Using Route Filter

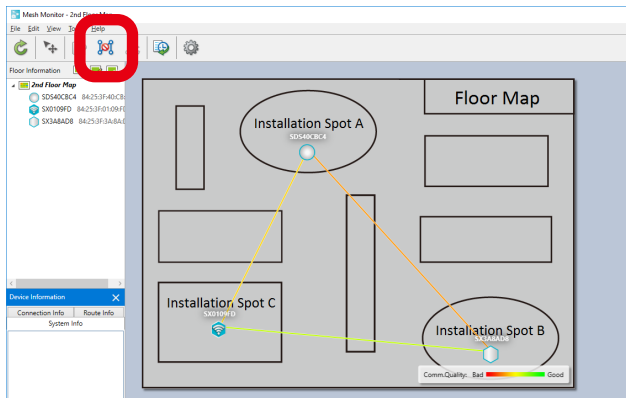
By configuring the route filter, the use of selected Mesh route can be disabled. When there are many people or devices coming and going and they use Mesh network, the Mesh route frequently switches and communication becomes unstable.

For example, if the Mesh route switches frequently between the route (1) and (2) as shown in below image, you can deliberately disallow the use of that Mesh route. By making the Mesh device (1) use the Mesh route (2) only, communication can be improved on Mesh network.



- If MNS-300EM is included in the route, the route filter cannot be set for it.

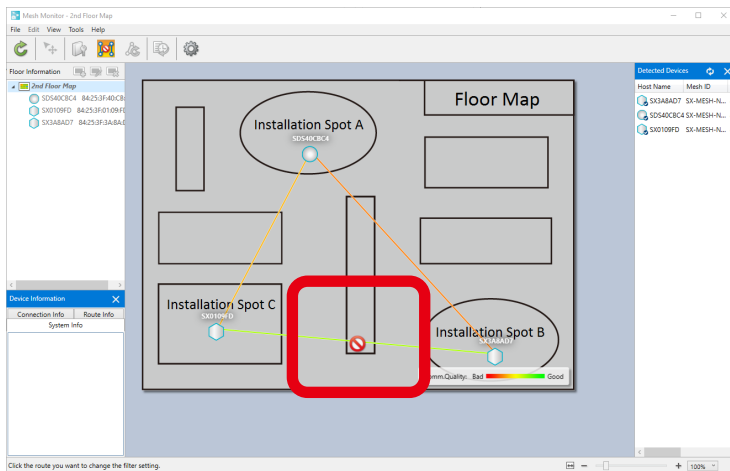
1. Click the icon **Route filter** from the tool bar to enable the route filter edit.



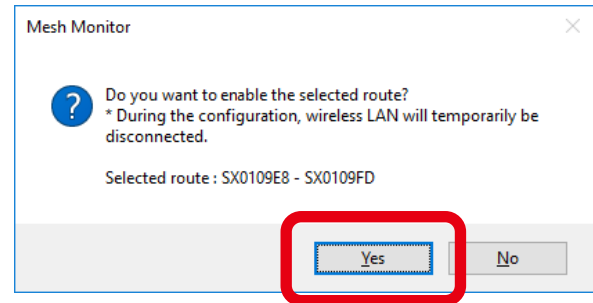
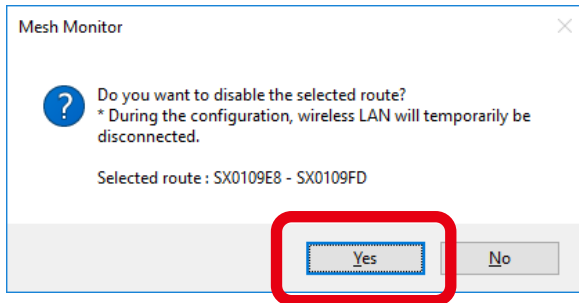
- The route filter edit can also be enabled by the following method:
- Click **Tools - Route Filter** from the menu bar.

**Note**

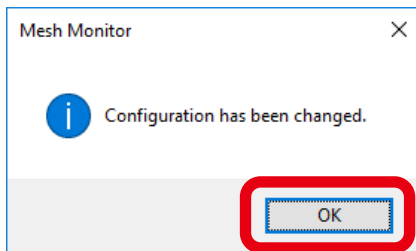
2. After the filter edit is enabled, click a Mesh route to enable the route filter on it. To disable the route filter, click it again.



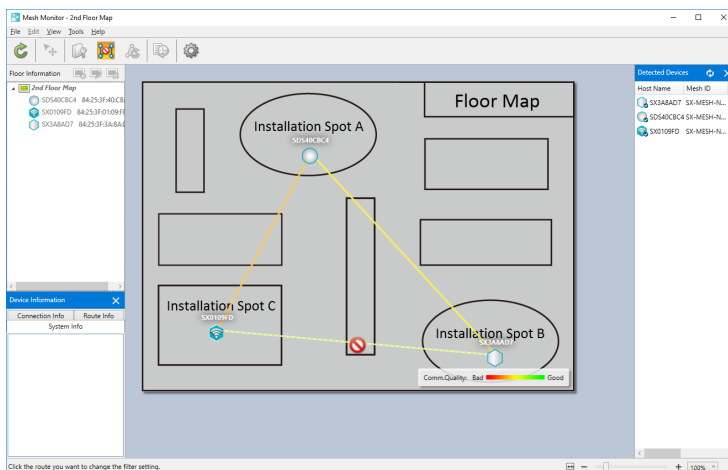
### 3. When a Mesh route is clicked, a confirmation dialogue appears. Click **Yes**.



### 4. The route filter setting is configured on the Mesh device and the configuration result is displayed. Click **OK**.



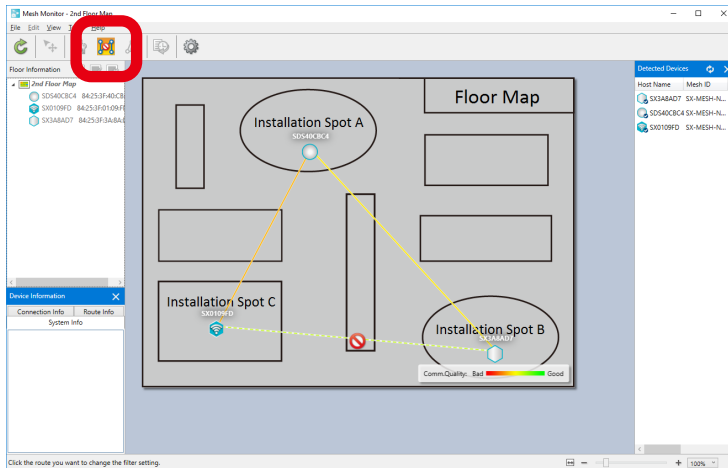
### 5. Mesh Monitor shows the floor map. The filtered Mesh route is shown with a dotted line.



#### Note

- All routes and connection lines are displayed when the route filter is enabled.

**6.** Click the icon **Cancel route filter edit** to finish the route filter edit.

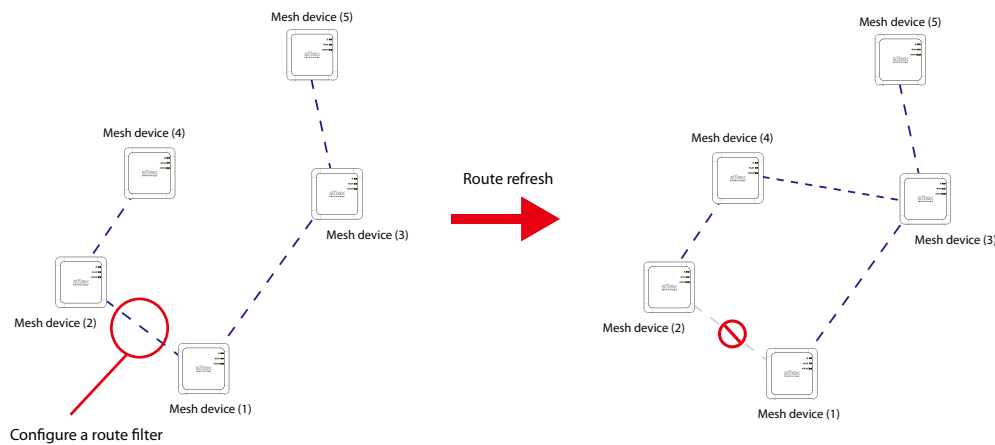


**Note**

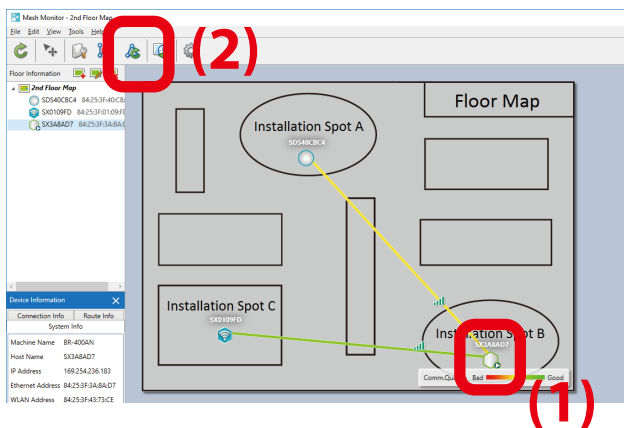
- The route filter edit can also be finished by the following method.
- Click **Tools - Route Filter** from the menu bar.

## 5-3. Using Route Refresh

If the route refresh is executed, the Mesh routes are rebuilt immediately. Although Mesh Monitor regularly rebuilds the Mesh routes, this function is used for when a route filter is set or when a Mesh device is configured and Mesh routes should be rebuilt promptly.



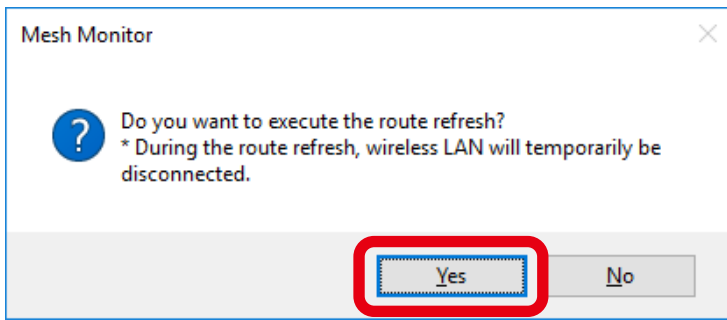
1. Select one Mesh device at the floor information or the floor map (1), and click the icon **Route refresh** (2) from the tool bar.



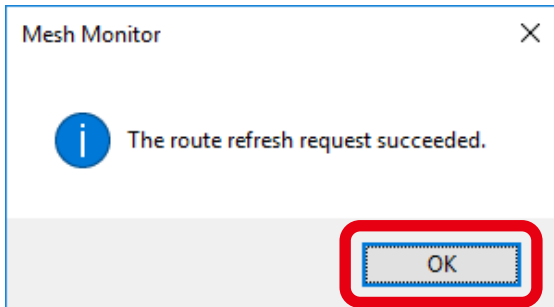
### Note

- The route refresh can also be executed by the following methods:
  - Select a Mesh device and click **Tools - Route Refresh** from the menu bar.
  - Right-click on the selected Mesh device and select **Route Refresh** from the context menu.

2. The confirmation dialogue appears. Click **Yes**.



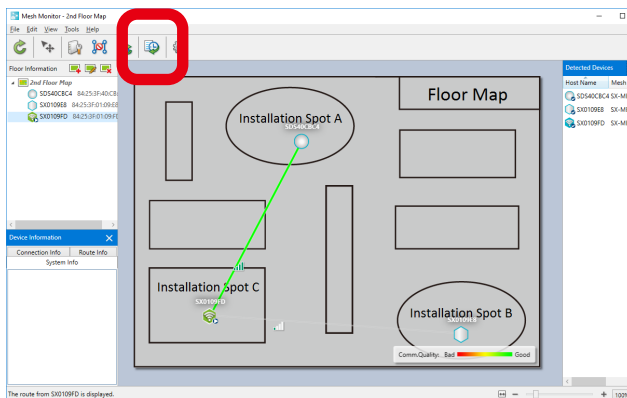
3. The result of route refresh is displayed. Click **OK**.



## 5-4. Checking Status Changes of Floor

Mesh Monitor records changes of Mesh routes and Mesh device status in the Mesh network. In the Mesh information record window, network status transition of each floor can be checked.

1. Click the icon **Mesh Information Record** from the tool bar.

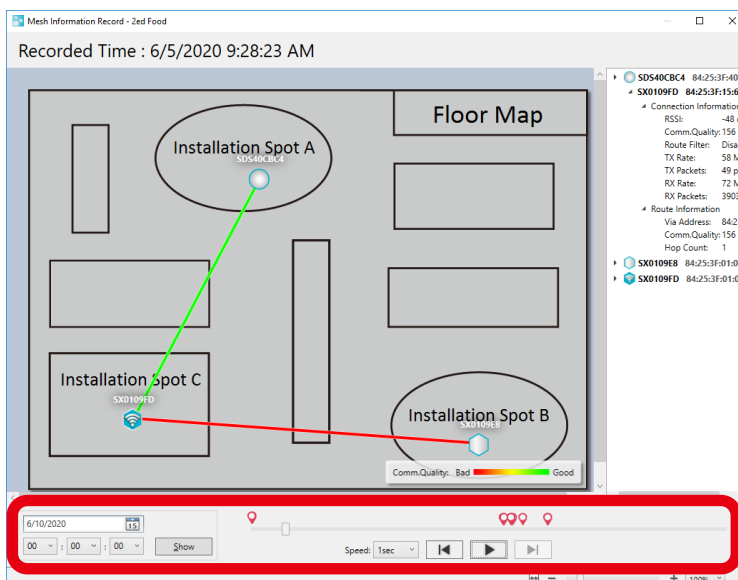


### Note

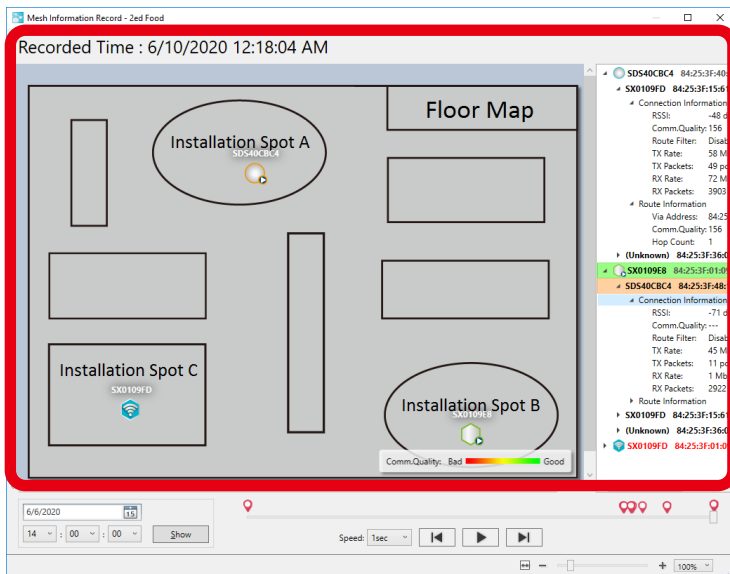
- The Mesh information record can also be displayed by the following methods:
- Select a floor and click **Tools - Mesh Information Record** from the menu bar.
- Right-click on the selected floor and select **Mesh Information Record** from the context menu .

2. The Mesh information record window is displayed.

Specify the date/time or use the button or slider to determine the information you want to display.



3. The information corresponding to the slider position is displayed. By looking at the detailed information of floor map and Mesh device, you can check the network status as of the recorded time.



- Click the play button to show the record. The network status change of the Mesh network is displayed in chronological order.

**Note**

- The red texts in the device list show error devices. Click a device name in red to see the detailed information (e.g. connected Mesh device, Mesh route, etc.).



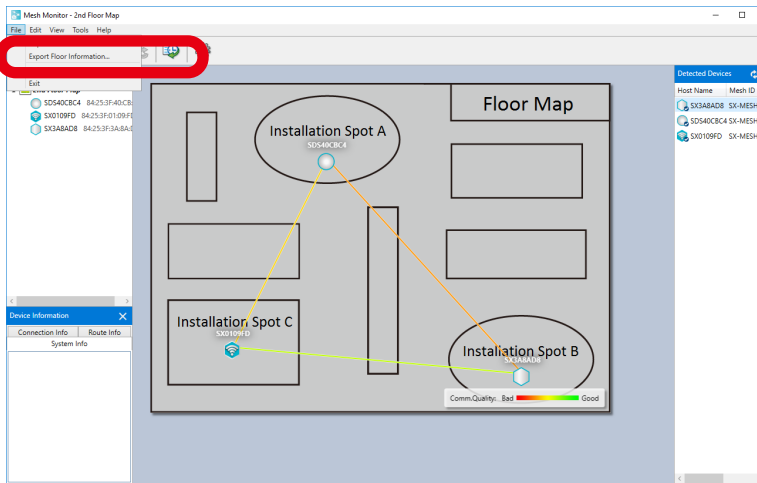
## 5-5. Importing/Exporting Floor Information

Mesh Monitor can export the floor and Mesh device information as a file.

By importing the exported file to Mesh Monitor on different PCs, several users can share the same floor map.

### Exporting Floor Information

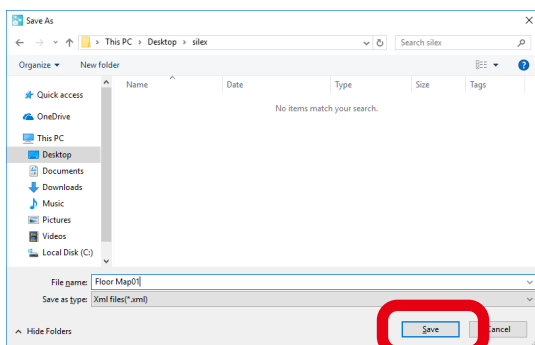
1. Select **File - Export Floor Information** from the menu bar.



#### Note

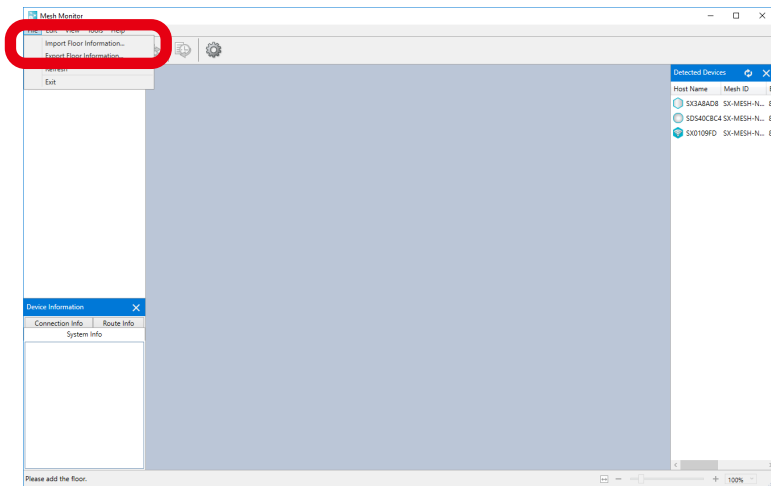
- The floor information can also be exported by the following method:
  - Right-click on the floor information and select **Export Floor Information** from the context menu.

2. The Save As window will open.  
Input a name of the file and click **Save**.



## Importing Floor Information

1. Select **File - Import Floor Information** from the menu bar.



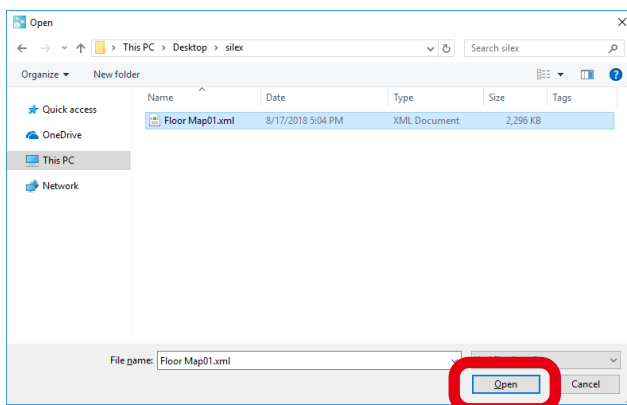
- If the floor information with a same name has already been registered, it is replaced with the imported information.



**Note**

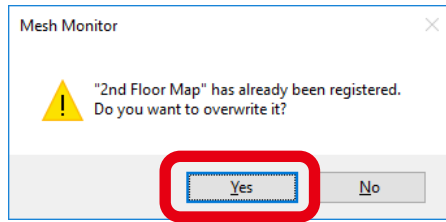
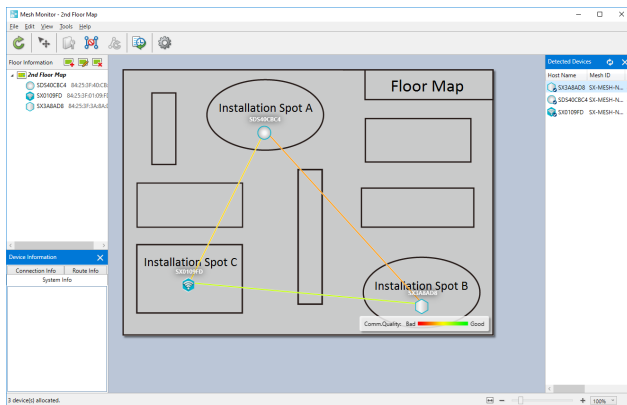
- The floor information can also be imported by the following method:  
- Right-click on the floor information and select **Import Floor Information** from the context menu.

2. The Open window will appear.  
Select a file to import and click **Open**.



**Note**

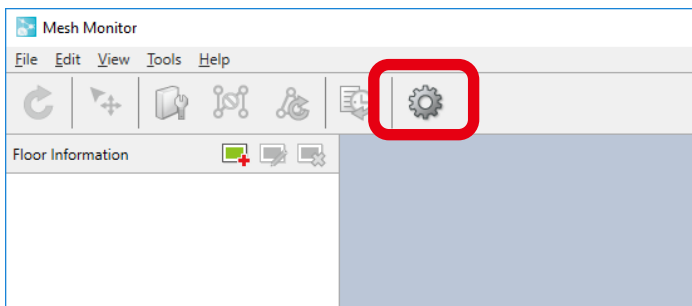
- When the floor information with a same name has already been registered, the below message is displayed. Clicking **Yes** will replace the floor information with the imported file.

**3.** The imported file information is displayed.

## 5-6. Changing Mesh Monitor Settings

Mesh Monitor's operational setting such as the refresh interval of the main window or the brightness of the background image, etc. can be changed by configuring the option setting.

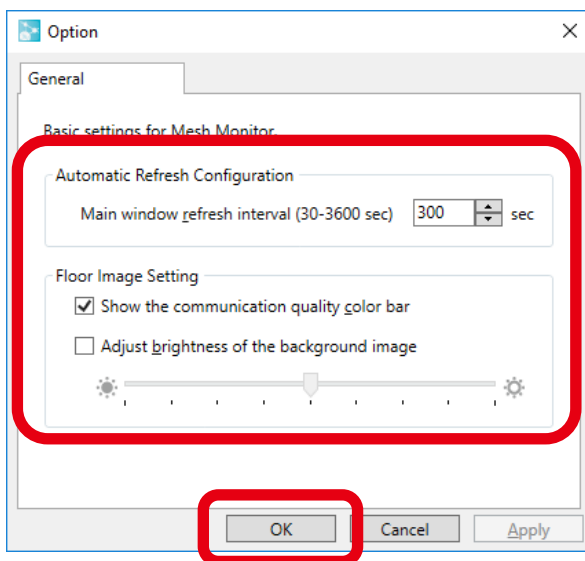
1. Click the icon **Option** from the tool bar.



- The option window can also be displayed by the following method:
- Click **Tools - Option** from the menu bar.

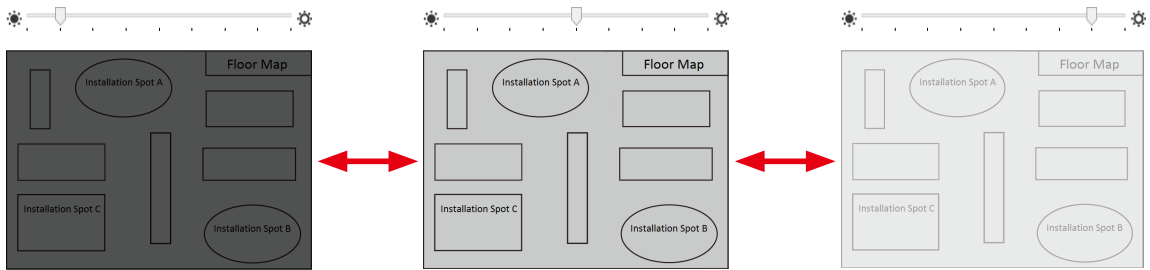
### Note

2. The Option window will appear.  
Change the settings and then click **OK**.





- If the check box **Adjust brightness of the background image** is checked and the slider is moved, the brightness of the background floor map changes as follows:

**Note**

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# A. Appendix

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## A-1. Troubleshooting

This section gives possible solutions of the problems that you may encounter while installing or using Mesh Monitor.

Mesh device is not found on a list of detected devices.

The Mesh device may not be started.	
Solution	Turn on the Mesh device.
The Mesh device may not be connected to the Mesh network.	
Solution	As long as Mesh devices are running in the same Mesh network, they must share the wireless mode, communication channel, Mesh group name and Mesh encryption key. Check the setting of the Mesh device which does not appear in the list.

On the floor map, the Mesh device is marked as 'not detected' or 'error'

The Mesh device may not be started.	
Solution	Turn on the Mesh device.
The Mesh device may not be connected to the Mesh network.	
Solution	As long as Mesh devices are running in the same Mesh network, they must share the wireless mode, communication channel, Mesh group name and Mesh encryption key. Check the setting of the Mesh device which does not appear in the list.

When configuring the Mesh device, the message "The device configuration failed." appears.

The Mesh device may have an IP address or a subnet mask which cannot communicate with Mesh Monitor's PC.	
Solution	Change the IP address or the subnet mask of the Mesh device so that it can communicate with the PC.
The communication route may not have been built for the Mesh device.	
Solution	By using Mesh Monitor, check whether communication route has been built for the Mesh device.
The Mesh device may not be receiving radio waves.	
Solution	Increase the transmission power of the Mesh device or reduce the distance between devices.



When the route refresh is executed, the message "The route refresh request failed." appears.

The Mesh device may have an IP address or a subnet mask which cannot communicate with Mesh Monitor's PC.	
Solution	Change the IP address or the subnet mask of the Mesh device so that it can communicate with the PC.
The communication route may not have been built for the Mesh device.	
Solution	By using Mesh Monitor, check whether communication route has been built for the Mesh device.
The Mesh device may not be receiving radio waves.	
Solution	Increase the transmission power of the Mesh device or reduce the distance between devices.

When configuring the route filter, the message "The device configuration failed". appears.

The Mesh device may have an IP address or a subnet mask which cannot communicate with Mesh Monitor's PC.	
Solution	Change the IP address or the subnet mask of the Mesh device so that it can communicate with the PC.
The communication route may not have been built for the Mesh device.	
Solution	By using Mesh Monitor, check whether communication route has been built for the Mesh device.
The Mesh device may not be receiving radio waves.	
Solution	Increase the transmission power of the Mesh device or reduce the distance between devices.

The route filter is mistakenly set for all routes to the Mesh device.

Solution	Initialize all the Mesh devices that you have mistakenly set the route filter with. For how to initialize the devices, refer to the user's manual of each Mesh device.
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When the route refresh is executed while a DFS channel is in use in the Mesh network, some Mesh devices are not detected correctly.

The Mesh device may be detecting radio waves for 1 min as it has failed to detect other Mesh devices when the route refresh is executed.	
Solution	If a Mesh device cannot detect the other Mesh devices in the Mesh network when the DFS channel is used and the route refresh is executed, the Mesh device will check if there is a radar wave. Since the Mesh device cannot communicate with others for about 1 min during this check, it may not be found by Mesh Monitor. To avoid this, set a channel other than DFS channels for the Mesh network communication.

When I select a Mesh device and check the hop count at **Route Info**, the count is 5, but actual count of Mesh devices building the Mesh routes is 6.

The hop count is not the count of Mesh devices building the Mesh routes.	
Solution	The hop count is correct. The count of hops shows how far the Mesh route is established from the selected Mesh device. The selected device is not included in the count.

The communication quality between Mesh devices is shown in red or orange.

One of devices connecting to the Mesh network may keep sending broadcast packets.	
Solution	When a device keeps sending broadcast packets in the Mesh network, it will reduce the communication bandwidth and interrupt the communication with others. Cut off the device from the Mesh network or remove a cause that makes the device keep sending broadcast packets.
Mesh device may have a problem for its configuration or installed environment.	
Solution	Select a Mesh device whose communication quality is bad and check the <b>Device Info - Connection Info</b> or <b>Route Info</b> . When the communication quality is good, it has a higher transmission rate and stable communication. Check the configuration and installation location of the Mesh device to improve the quality. Example) - Increase the transmission power of the Mesh device (e.g. 50% -> 70%) - Relocate the Mesh device or add another Mesh device to shorten the communication distance.

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## Customer Support Center

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Customer Support is available for any problems that you may encounter. If you cannot find the relevant problem in this manual or on our website, or if the corrective procedure does not resolve the problem, please contact Silex Technology Customer Support.

Contact Information	
USA	support@silexamerica.com
Europe	support@silexeurope.com

**Note**

- Refer to the Silex Technology website (<https://www.silextechnology.com/>) for the latest FAQ and product information.

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