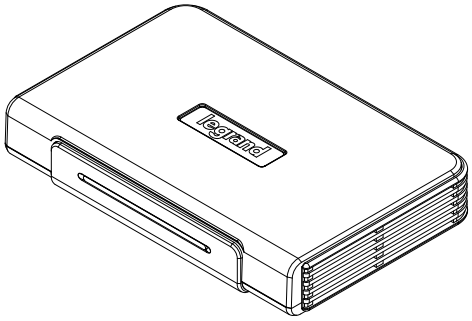
Wattstopper®

LMBR-650 Setup and Commissioning
User Guide

No: 29188 – 05/23 rev. 2



This document provides step-by-step details on the process needed to commission one or more LMBR-650s and discover all wireless devices in a DLM network.

This document covers only the steps needed for commissioning and wireless discovery. For further details on LMCS programming, including creating wireless scenes and schedules, see the LMCS-100 Operation Manual, available at: https://www.legrand.us/wattstopper/digital-lighting-management/configuration-controls/dlm-computer-interface-tools-and-software.aspx.

For details on using DLM Dashboard software with the LMBR-650, see the DLM Dashboard User Guide.

CONTENTS

CONNECTING LMCS-100 TO A NETWORK AND CREATING A SITE

Connecting to a wireless network requires creating a site, so that the network is secure and accessible only to those with proper permissions.

The following is a basic summary of these steps:

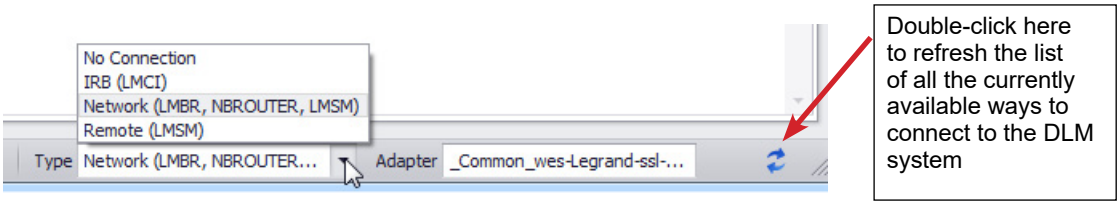
- Open LMCS-100
- Log into your user account or request an account if you do not have one.
- Create a site, or open a previously created site.
- Select the connection **Type** and **Adapter** use to connect to the network. (This can be done before or after logging in and creating a site.)
- Discover the LMBR-650s used in this site. This will lock the LMBRs so that they can only be accessed by your account or other authorized accounts.

- Discover all wireless DLM devices within range of the LMBR. Only devices wit the same Network and Channel settings as the LMBR will be found. New devices all ship with default values, so in a new site all devices should be found.
- Select the devices that you want to be part of the network with the LMBR. After selection they will migrate to a new Network with the LMBR. In a scenario with multiple LMBRs, each LMBR will have its own Network and Channel settings, so each group of devices you select will migrate to the Network of that LMBR.
- For each room pair the wireless devices together so that they only communicate with each other and not with devices in other rooms.

Once these steps are complete, you can adjust device parameter values for rooms that were already creating using an off-line project, or modify current parameters in real time and send them to the devices.

Connecting to a Network or Room

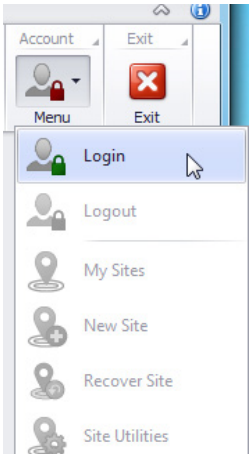
Select the connection appropriate to the project you are working on. Select “Network”, then select the **Adapter** that provides the connection to that network.



For applications with multiple rooms networked together using BACnet, the available BACnet networks will show up in the list. The “Remote Connection” value allows you to remotely connect to a network controller via an Internet connection for remote discovery, read, and send commands.

Logging in to Your Account or Requesting an Account

1. To log in to your account, click **Menu** in the Account section of the ribbon and select Log In.



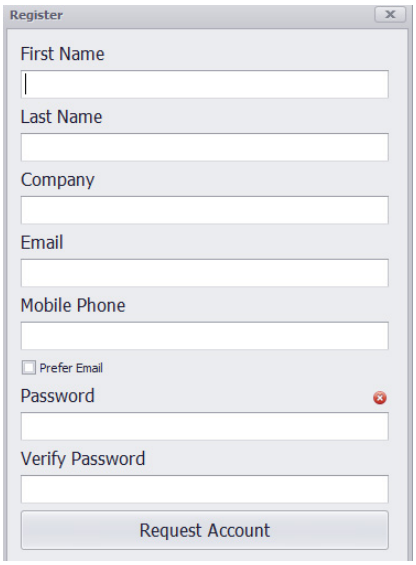
2. Enter your User Name and Password. Once logged in, the “lock” in the Account icon will change from red to green.

NOTE: You must be connected to the Internet the first time you log in to your account on a specific PC. This will download the needed security certificates that will be used with the site. Once this is done, it is possible to log in while off-line, create sites, and then upload them to the cloud at a later point. If you log in on a different PC at a later time, you will once again need to be initially connected to the Internet.

If you do not already have an account, you can request one from within LMCS (you must be connected to the INTERNET). Note that it is also possible to request an account through the DLM Config App for mobile devices.

1. Select “Request Account” from the menu to open the **Register** dialog.

Register Dialog



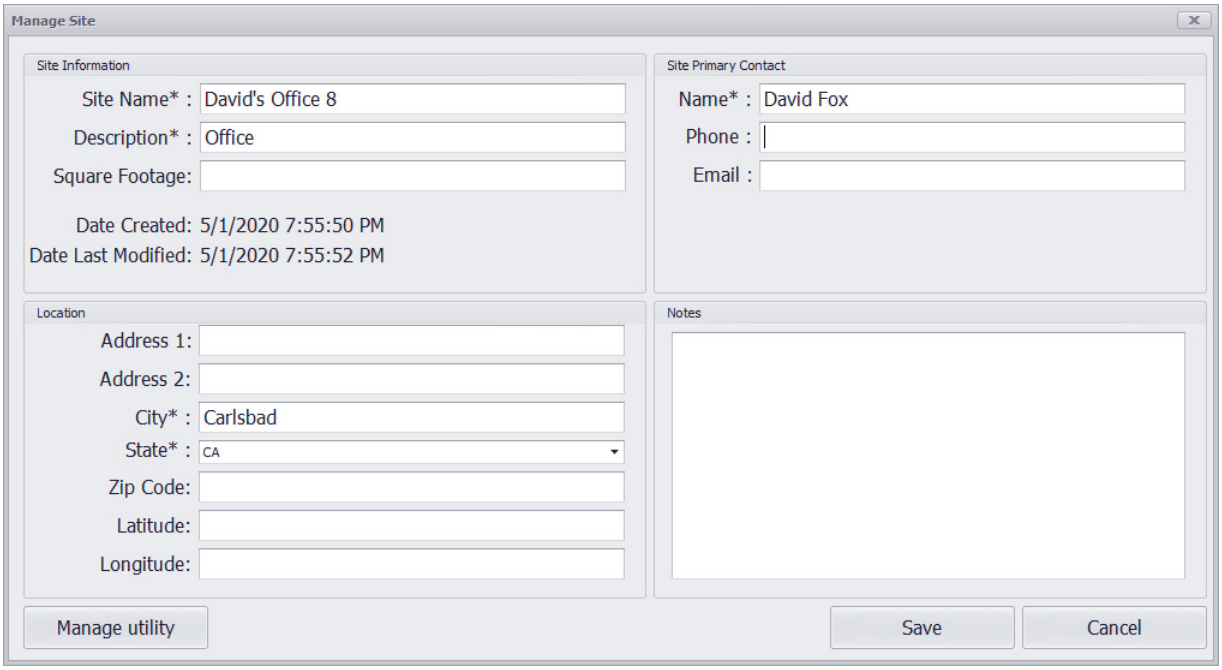
2. Enter information in all fields. Passwords must follow these rules: at least 8 characters long, containing at least one capital letter and one number.
3. After requesting an account, an email will be sent to the address entered here once the account has been authorized. LMCS will not provide any indication that the account has been authorized.

Creating a Site

After logging in, the next step is to create a Site. A site allows you to save all Project parameters onto the cloud, so they can easily be accessed from more than one computer. Additionally, the Site provides security, as only the user who creates the site and any other users who are specifically authorized will be able to access the site data as well as the devices themselves.

1. From the **Menu** in the Account section of the ribbon, select “New Site”. The **Manage Site** dialog opens.

Manage Site



2. You must enter all fields marked with an asterisk. Others are optional.

   The Site Primary Contact section is used if you need to recover site information. A code can be sent to the user from Wattstopper support, to unlock the site information.

   The **Latitude** and **Longitude** fields are for informational purposes only. (There are other Latitude and Longitude fields, in the **Set Site Time** dialog which are used for Astro scheduling, to determine the exact times of sunrise and sunset—see the section on DLM Site Time/Location in the LMCS-100 Operation manual. But any information entered on the Manage Site dialog does not affect the fields in that dialog.)
3. Click **Save**. LMCS will create the site on the cloud. Only the site is created at this point, with no project attached. Once you have created a project, or begun partial work on it, clicking **Save** will save that project to disk. To save the project to the site, click **Save To Cloud**.

Connecting to a Network with both Wired and Wireless Rooms

In the case of a network with both wired and wireless rooms, the wired rooms will include an LMBC-650 network bridge. The process of connecting to this network is identical to the process for an all wireless network. However, during the wireless discovery process, for rooms with wired devices you will only discover the wireless bridge in each room. After that, from within the page for the bridge itself, you can run a separate discovery to discover the wired devices connected to that bridge. For details, see the section on the LMBC-650 in the LMCS-100 Operation Manual.

Additionally, an LMBC-650 can support a hybrid room with both wired and wireless devices. In this case, the wireless devices are discovered along with the LMBC-650, and the wired devices discovered separately.

LMBR-650 NETWORK SETUP

IMPORTANT – At default, the LMBR-650 is configured for DHCP and requires DNS to provide it with a IP address before you can even connect to it. Therefore, all LMBR-650s (as well as the computer) must be connected to a router when you initially discover it within LMCS. If you do not plan to have the router permanently connected to the network, you must switch the LMBR-650 to a static IP address, once it has been discovered. If there are multiple LMBR-650s, set each one to a different IP address and they will all be able to communicate both with LMCS and with each other.

Therefore, Wattstopper recommends the following steps for setting up communication between LMCS and all LMBR-650s in your project:

1. Connect your PC and all LMBRs to a router. If there is more than one LMBR, one will be used as the Primary and should be connected to the others using Ethernet cable, via a switch.

   NOTE: It is Wattstopper best practice that the Primary LMBR be used only for communication with other LMBRs and not have any wireless devices assigned to its network. Therefore, the Primary LMBR will often be mounted in a network enclosure and will only communicate via Ethernet cable and not with its wireless radio. Because of this, it is important to note the MAC address of that LMBR to make sure that it is designated the primary LMBR (see steps 5 and 12).
2. Follow steps 1 through 5 of the Discovery wizard, described on the following pages.
3. If the router will not be permanently connected to the LMBRs, set the IP address of each router to a static IP address, as described in steps 6 through 11.
4. Change the Primary LMBR, if needed, as described in step 12.
5. Start the Discovery wizard a second time. After rediscovering the LMBRs, continue with device discovery and pairing, as shown starting in step 13.

NOTE: It is also possible to run through the entire discovery process first, then go back and change to static IP addresses. Both methods work equally well, but if you need to change the Primary LMBR, you will want to stop the discovery process to do that and then resume.

NOTE: If the router will remain permanently connected to the LMBRs, there is no need to switch them to static IP.

NETWORK/DEVICE DISCOVERY AND DEVICE PAIRING WIZARD

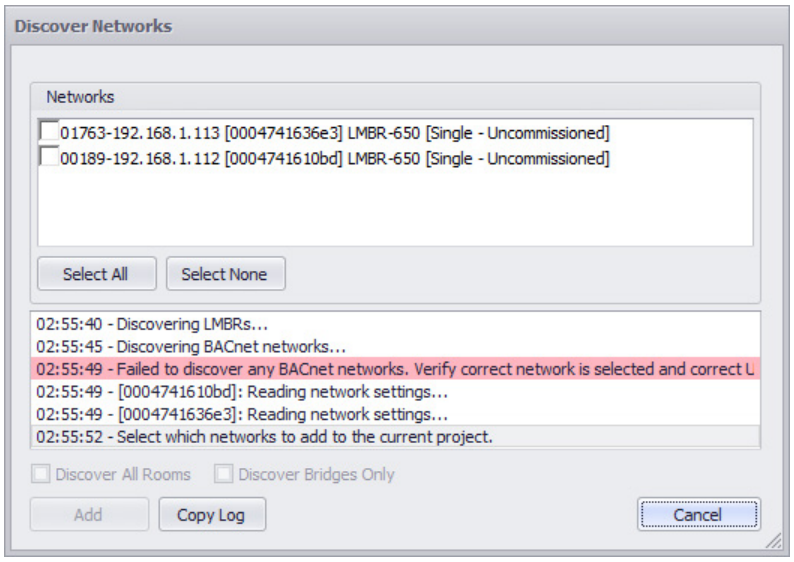
A wizard walks you through the process of discovering LMBR-650s, assigning network IDs, discovering wireless devices, and pairing them in rooms.

1. In order to discover devices in a wireless network, you must first log in to your cloud account and create a site or open a site previously created for the project, as described in the first section of this document.
2. Once this is complete, click **Discover** on either the **Home** tab or the information section for the New Building. The **Discover Networks** dialog opens and the discovery starts automatically. All routers found on the network are listed. This will include both LMBRs and NB Routers. Each router displays the its current IP address. An LMBR-650 will also display its MAC address after the IP address.

   The status note above the list indicates the process in the discovery. It first will attempt to discover LMBRs, then discover other BACnet Networks on other routers. Finally, it will display the message “Select which networks to add to the current project.”

   Once the LMBR-650 is found, if it has never been configured, it will display “[Single - Uncommissioned]”, indicating it is at the default values and that each LMBR is treated as a separate wireless router.

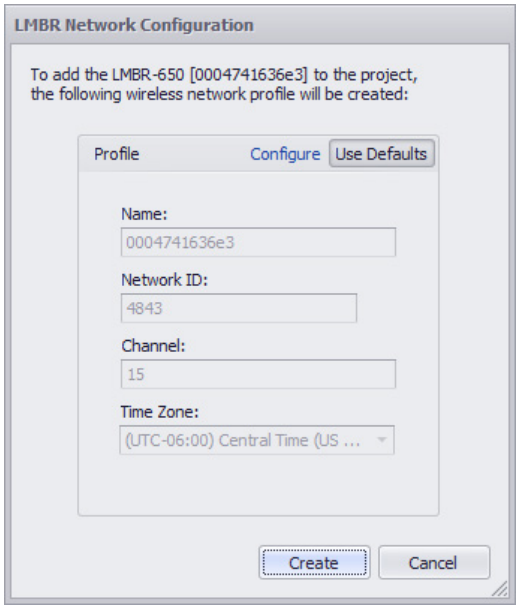
Discover Networks



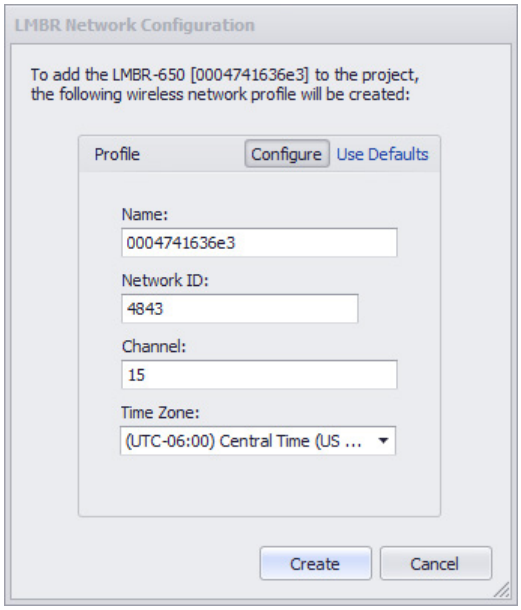
3. Select one or more of the LMBR-650s. Click **Add**. A new dialog pops up that allows you to select the **Network ID** and **Channel** the LMBR will use to communicate with the wireless DLM devices. It will pick a couple of numbers automatically. The **Name** used to identify the LMBR will be set to the MAC address of the LMBR. If you want to change either or both of the numbers or create a custom name, click **Configure** and the fields will be enabled for editing. If you click **Use Defaults**, the fields are disabled and set to the values chosen by LMCS.

   NOTE: If there are multiple LMBR-650s, each one must be set to a different **Network ID**. The **Channel** can be the same on multiple LMBRs, but Wattstopper recommends that each one use a different channel.

LMBR Network Configuration

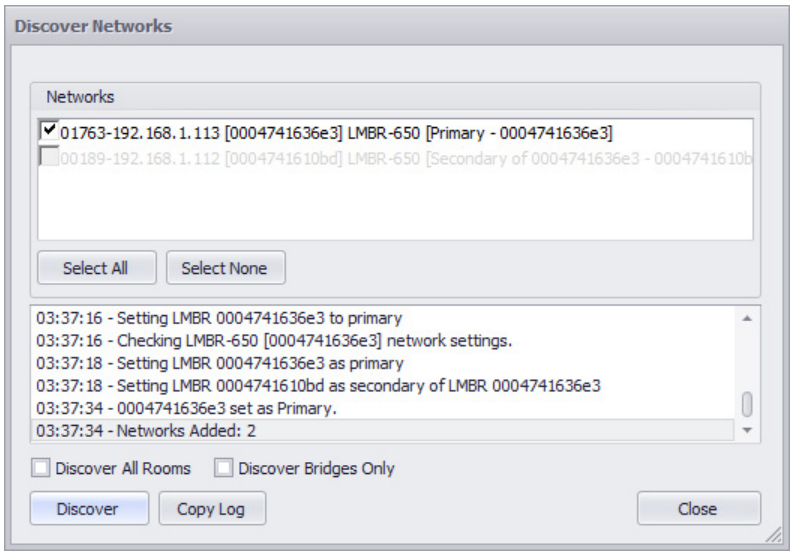


Network Configuration with fields enabled



4. Click **Create**. The LMBR will be configured for the chosen **Network ID** and **Channel**. A pop-up will appear informing you that the clock on the LMBR has been reset. You can update the time in the LMBR using the Site Time/Location Tool. See the LMCS-100 Operation Manual for details.
5. If you have selected more than one LMBR, once the network configuration is complete, the process will repeat for each subsequent LMBR, with different default values for each LMBR network. Once all networks are configured, the Discover Networks Dialog changes to show the number of Networks added.
   - If there is only a single LMBR, it will show that LMBR with “Single” in the description.
   - If there are multiple LMBRs, LMCS will configure the first one in the list to be the Primary LMBR and the others will be considered secondary LMBRs. The primary LMBR will be enabled, while the others are disabled. **Although the first LMBR is picked as primary by default, it is likely that a specific LMBR will be intended to be the primary by virtue of where it is installed. You may therefore need to change the Primary, as discussed in step 12.**

Added Networks

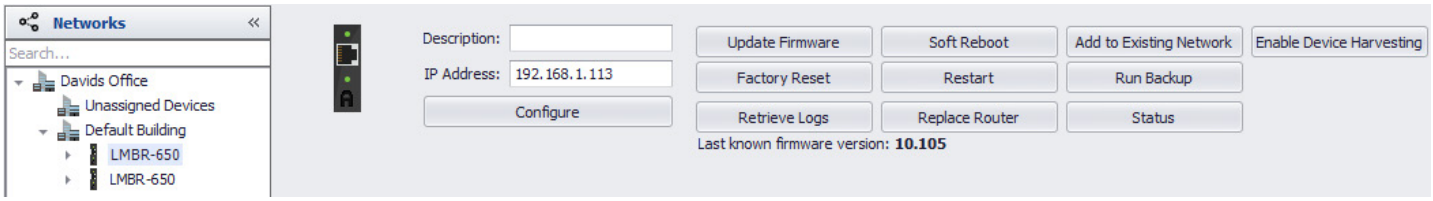


6. If the router connected to the LMBRs and computer is going to be removed after configuration, you need to configure the routers for a static IP address, as shown in the following steps. Click **Close** to exit the Discovery wizard.

   NOTE: If the router is going to remain permanently connected, you can skip to step 14. However, if you need to switch the Primary LMBR, you will still need to click **Close** and instead go to step 12.

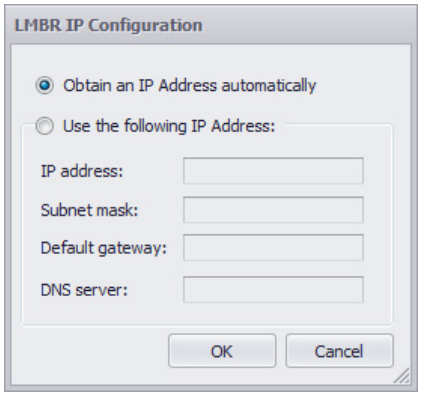
7. Click the **Networks** tab. Expand the tree and highlight the first LMBR in the tree.

LMBR-650 Information

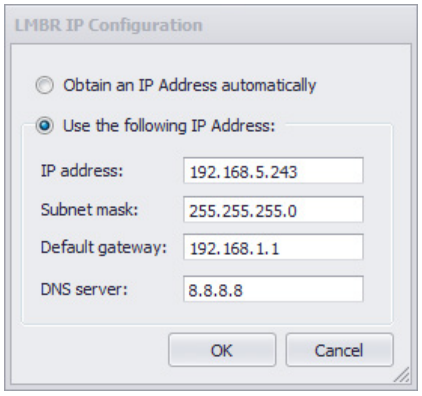


8. Click **Configure**. The **LMBR IP Configuration** dialog opens. By default the, “Obtain an IP Address automatically” option is selected.

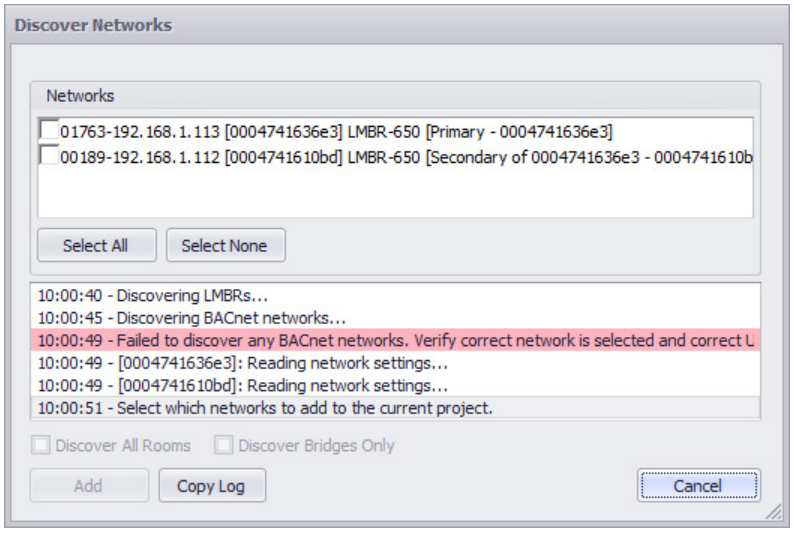
LMBR IP Configuration



9. Select “Use the following IP Address:”. The fields are enabled and populated with default values.



10. Change the values of the different parameters, if needed. Note that the default IP address will be different from the value assigned through DHCP. Click **OK** to change the LMBR to the new values.
11. If there are additional LMBRs, repeat steps 7 through 10 for each LMBR. Each LMBR must be set to a **different** IP address.
12. If you need to change the Primary LMBR, now is a good time to do it, before resuming the discovery process. Highlight the network under the intended LMBR in the tree, and click the **Is Primary** checkbox. See "Changing the Primary LMBR-650 in a Multi-LMBR Project" on page 17 for more details.
13. Once all LMBRs are set to a static IP address, return to step 2 and begin discovery again. This time, instead of showing up in the list as "Uncommissioned", the networks are displayed.



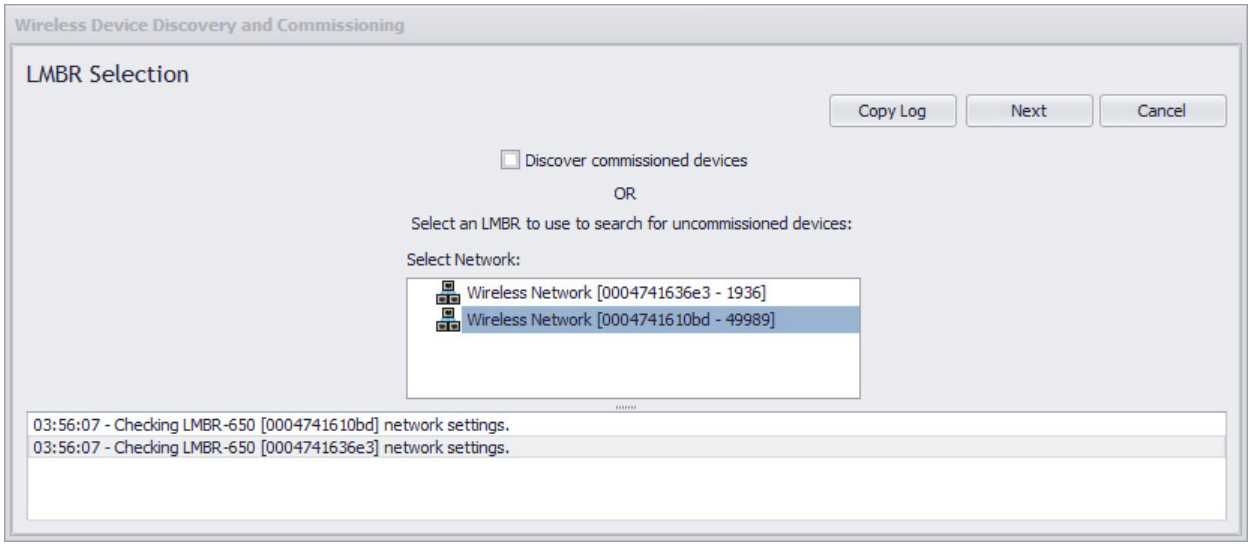
Select all the LMBRs and click **Add**. After the wizard completes adding the LMBRs, the Add button changes to Discover, as shown in step 5 on the previous page.

14. Click **Discover**. The **LMBR Selection** dialog displays, showing each LMBR that you previously configured, with a Wireless network below each LMBR. The networks are labeled showing both the MAC address (or Name) and the Network ID of each LMBR, so that you can distinguish them.

    From this dialog, you have two choices:

    - If you are discovering devices in a site for the first time, **deselect** the **Discover commissioned devices** checkbox. When you click **Next** you will go to the **Uncommissioned Device Discovery and Network Assignment** dialog. This is described starting in the next step.
    - If you are on a site in which devices were previously discovered but for some reason they are not in the currently LMCS site file (for example, they were deleted by accident), leave the **Discover commissioned devices** checkbox selected. When you click **Next** you will go to the **Discovering Commissioned Devices** dialog. This will allow you to rediscover those devices and re-pair them without having to reset those devices. This is described in Step 23 on page 12.

LMBR Selection



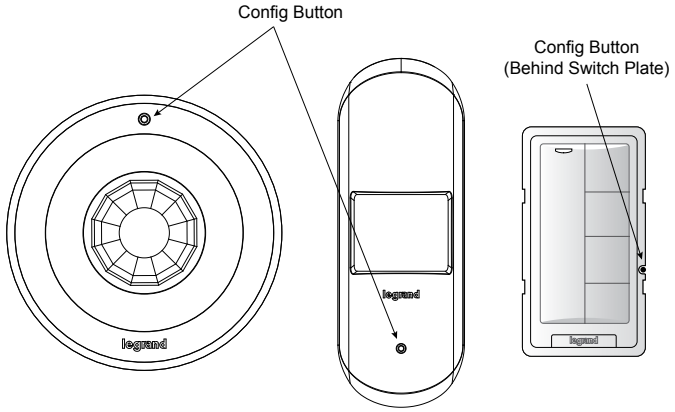
Click the network of one of the LMBRs to highlight it and then click **Next**. Note that once the **Discover commissioned devices** checkbox is deselected, the **Next** button is disabled until you select a network.

NOTE: You configure one LMBR at a time—once you finish configuring this one, you will return here to configure the next one.

NOTE: In a multi-LMBR site, it is Wattstopper best practice that the Primary LMBR be used only for communication with other LMBRs and not have any wireless devices assigned to its network. Therefore, you need to be aware of which one is the Primary and select a different network in which to discover and commission the wireless devices.

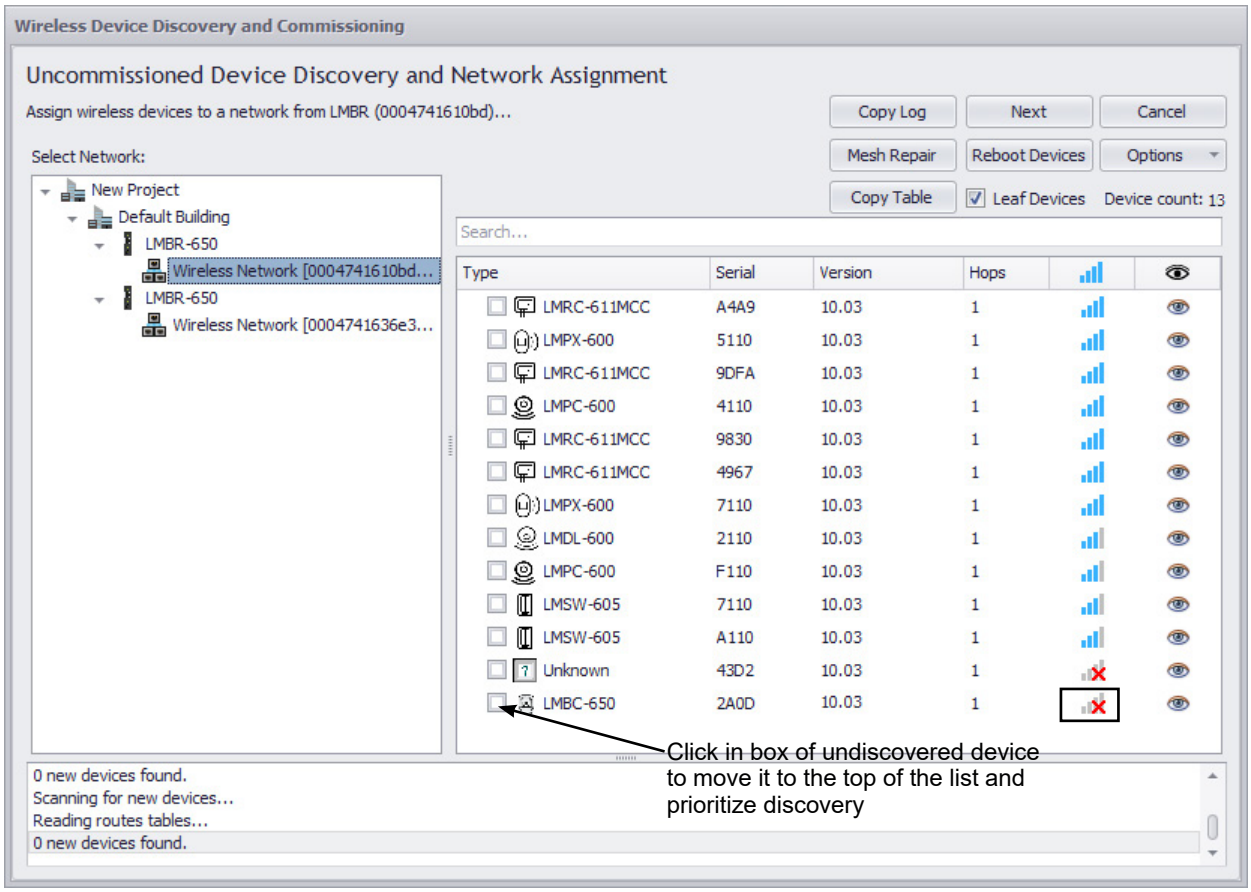
15. If you deselected the **Discover commissioned devices** checkbox, LMCS temporarily returns that LMBR to the default Network ID and Channel, so the LMBR can communicate with the wireless DLM devices still at default configuration. Then the **Uncommissioned Device Discovery and Network Assignment** dialog displays, and the LMBR begins searching for all wireless DLM devices set at their default values. Depending on the number of devices, this can take a little bit of time.

    Any wireless room or plug load controllers and LMBC-650 bridges will automatically display once found. But for all battery devices (sensors and switches), you must wake up the device by pressing the Configure button. This is located on the front cover for sensors. For switches, it is behind the switch plate cover and will require a small tool or paper clip.



Once woken up, the battery devices will remain awake for five minutes while the LMBR establishes contact. However, once you begin the next series of steps, LMCS takes control of the devices and they will remain awake for as long as is needed for LMCS to complete the process of moving the devices to the LMBR's network and pairing the devices in rooms.

Uncommissioned Device Discover and Network Assignment



As the LMBR finds the various devices, they are initially displayed as an unknown device, and once the LMBR has retrieved enough information, the **Type** and **Serial** number columns will display that information. The signal strength column shows a red X until all device information has been retrieved. The signal strength icon then changes to blue to indicate that the device is fully discovered.

While the devices are being discovered, clicking on the checkbox next to that device that has not been fully discovered will move it to the top of the list to prioritize discovery of that device. So in situations in which there are a large number devices, and you are only looking for certain ones, you can speed up the process by clicking on the devices you know that you want to discover. You can click **Pause Scan** so that the list will not reorder while you attempt to click on devices, then resume the scan.

NOTE: The **Serial** column displays the last four digits of the MAC address. Although every MAC address is unique, because the MAC is 12 digits long, it is possible for the last four digits to be the same on more than one device, as shown in the example above.

NOTE: If you have a room with an LMBC-650 wireless bridge and wired devices, you will only discover the LMBC-650 at this point. After wireless discovery is complete, you will discover the wired devices from the LMBC-650 window, as described later in this section. See "Discovering Wired Devices Connected to an LMBC-650" on page 14.

NOTE: If devices are not showing up in the list or are taking a long time to connect, clicking **Mesh Repair** may help. This will cause the devices to build new communication routes back to the LMBR-650.

NOTE: If you click **Copy Log**, the log messages displayed at the bottom are copied into your edit buffer and can then be pasted to a text editor.

NOTE: If you click **Copy Table**, the Type, Serial, Firmware version, Hops, and RSSI (Signal Strength) for each discovered device will be copied to the clipboard, for documentation purposes. Fields are comma delineated. Unknown devices are included. For example:

LMRC-611MCC, A4A9, 10.03, 1, -22

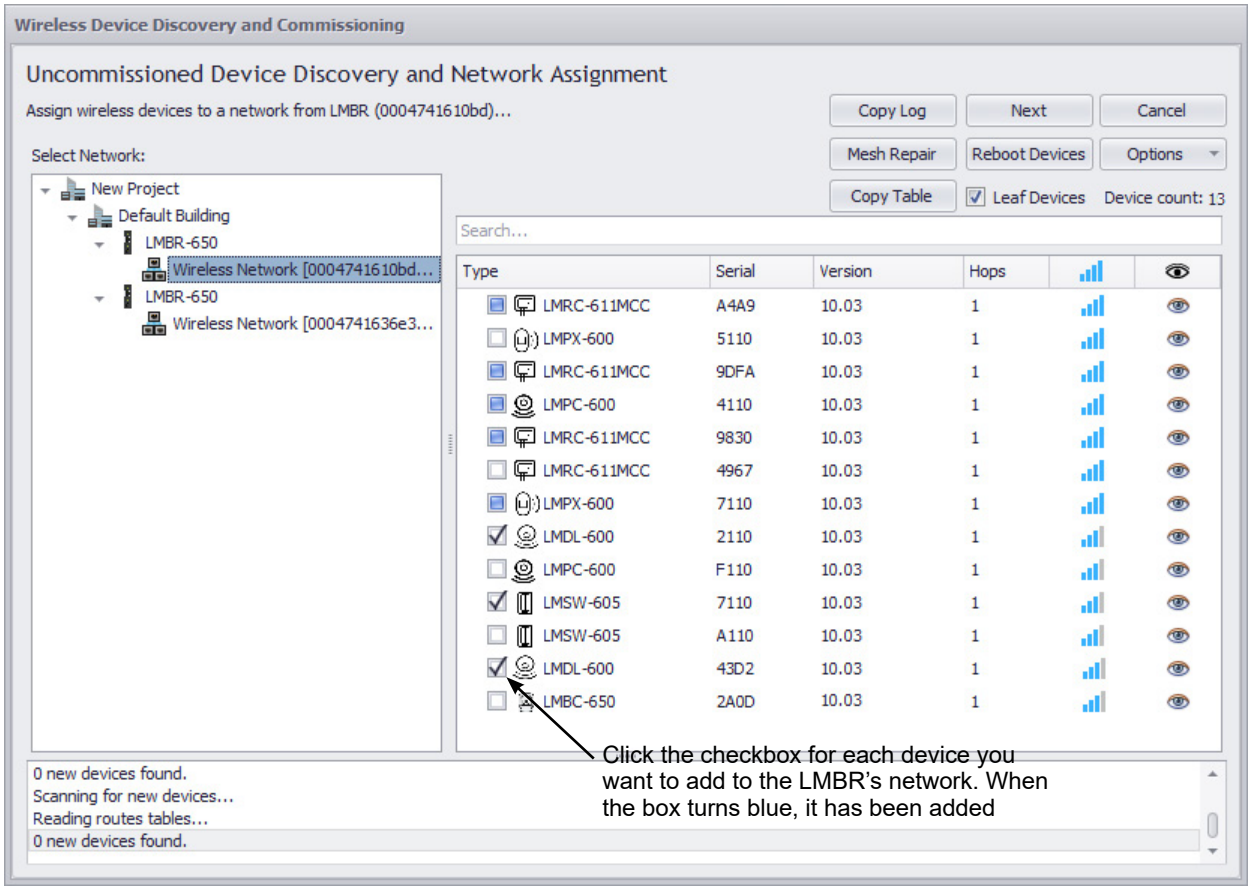
LMPX-600, 5110, 10.03, 1, -24

Unknown, 43D2, , 1,

16. Once all the desired devices have been fully discovered, click on the checkbox next to each device that you want to move to LMBR's network. The LMBR begins the process of moving the device to the new Network ID and Channel of the LMBR, and the checkbox will turn blue when complete.

    IMPORTANT: If you have more than one LMBR, be sure to select **only** the devices that you want to assign to this particular LMBR. After completing assigning devices to this LMBR, you will repeat the process for each additional LMBR.

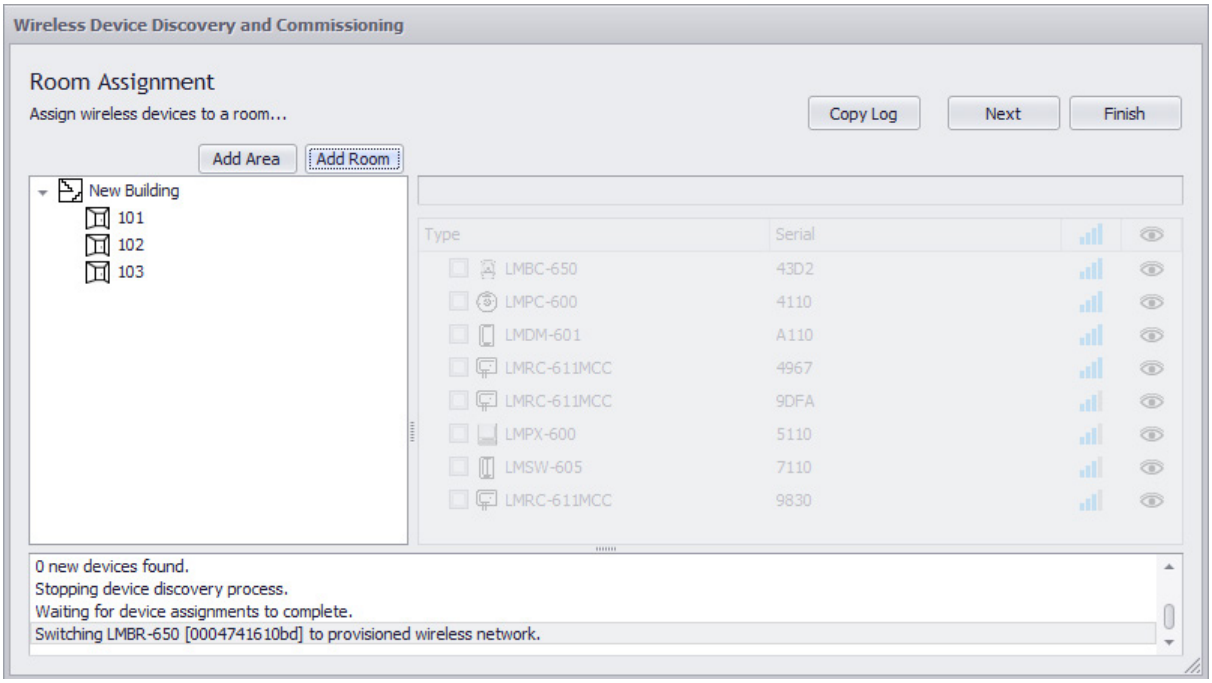
    NOTE: The LMBR may have to try several times to communicate with a device to get it to move to the LMBR's network. You may see failure messages in the log at the bottom. But the LMBR will keep trying until it has successfully moved all selected devices. (If you click **Next**, that will stop the move process.)



17. Once all of the selected devices have been moved, click **Next**. The **Room Assignment** dialog opens. This dialog provides the ability to create rooms and areas, assign the various devices into those rooms, and finally pair the devices in that room so they communicate with each other and not with devices in other rooms.

    NOTE: If you click **Finish** at this point, you can exit the Discovery wizard and then manually create rooms and move the discovered devices into those rooms at a later point by dragging and dropping in the tree. You will also then have to pair the devices after moving them. However, keep in mind that if you have more than one LMBR, you will have to restart the Discovery wizard in order to configure any additional LMBRs that were not previously commissioned.

Room Assignment

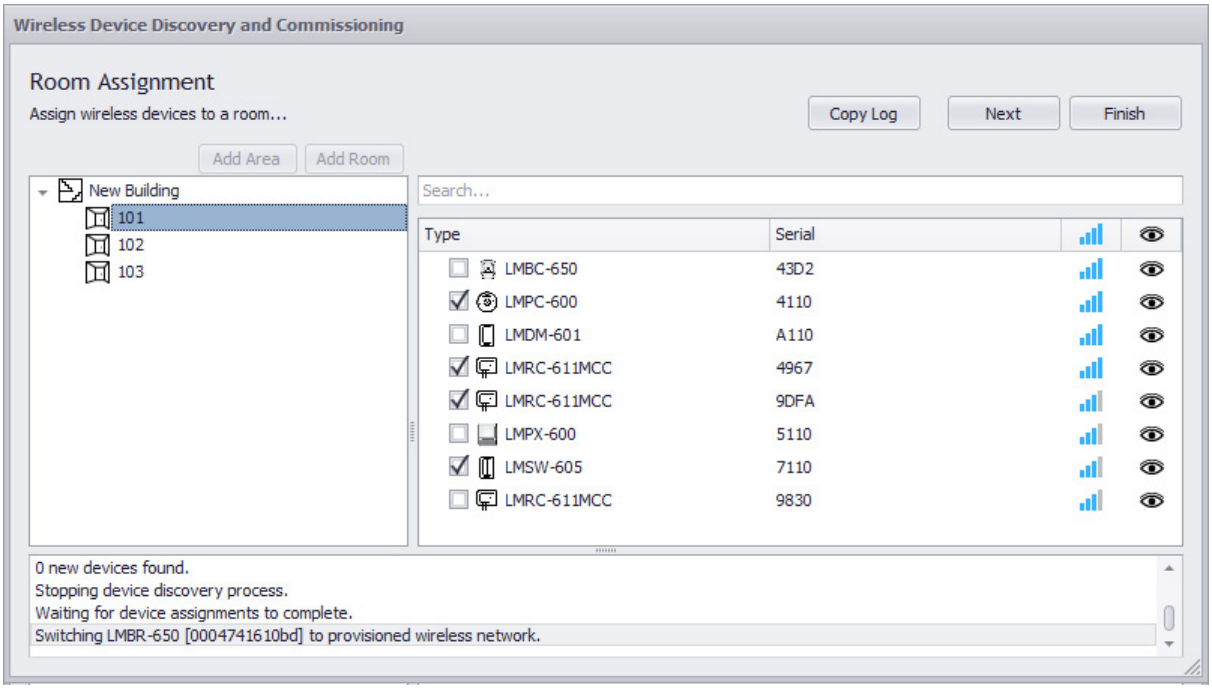


18. Highlight the building name to enable the **Add Area** and **Add Room** buttons, then click **Add Room**. A dialog pops up. Enter the room name and click **OK**. Repeat, adding as many rooms as desired. You can also click **Add Area** to name and add areas. You can then drag and drop the rooms into the areas, exactly the same as when creating areas and rooms in the Devices tree.

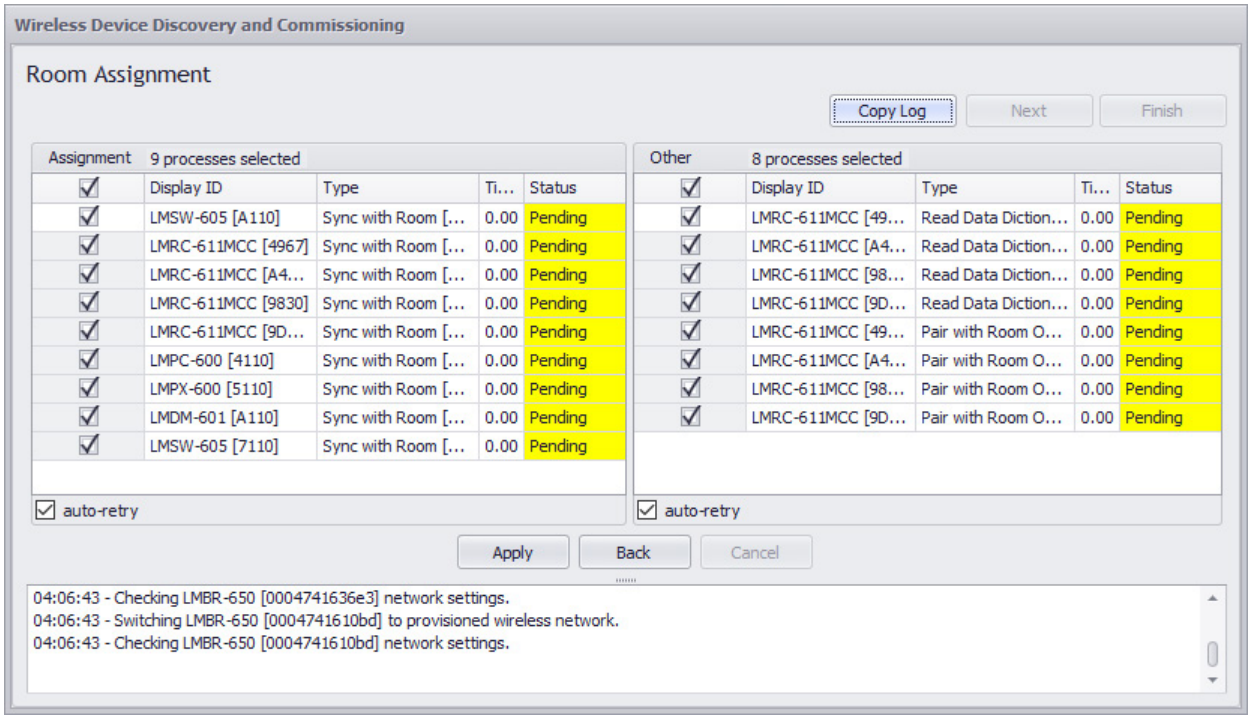
19. Once the rooms are created, click on a room to select specific devices to add to that room. As you add devices to a room and the click on another room, those devices are removed from the list since they are no longer unassigned.

    NOTE: A room cannot contain both a wireless room controller and an LMBC-650 wireless bridge. (You can, however have multiple room controllers in a room.) If you select a room controller for a room and then select an LMBC-650 while on that same room, the room controller will be deselected, and vice versa. Wireless switches and sensors **are** available to assign to a room with an LMBC-650, because wireless switches and sensors can be used to control a wired room controller.

    NOTE: It is not necessary to assign all devices to rooms at this point, if you are not certain where you want devices assigned. Once the wizard is completed, you can move devices into rooms within the Device tree and then pair them when viewing the room from the tree. For details, see "Adding Unassigned Devices to a Room and Pairing Them" on page 14.

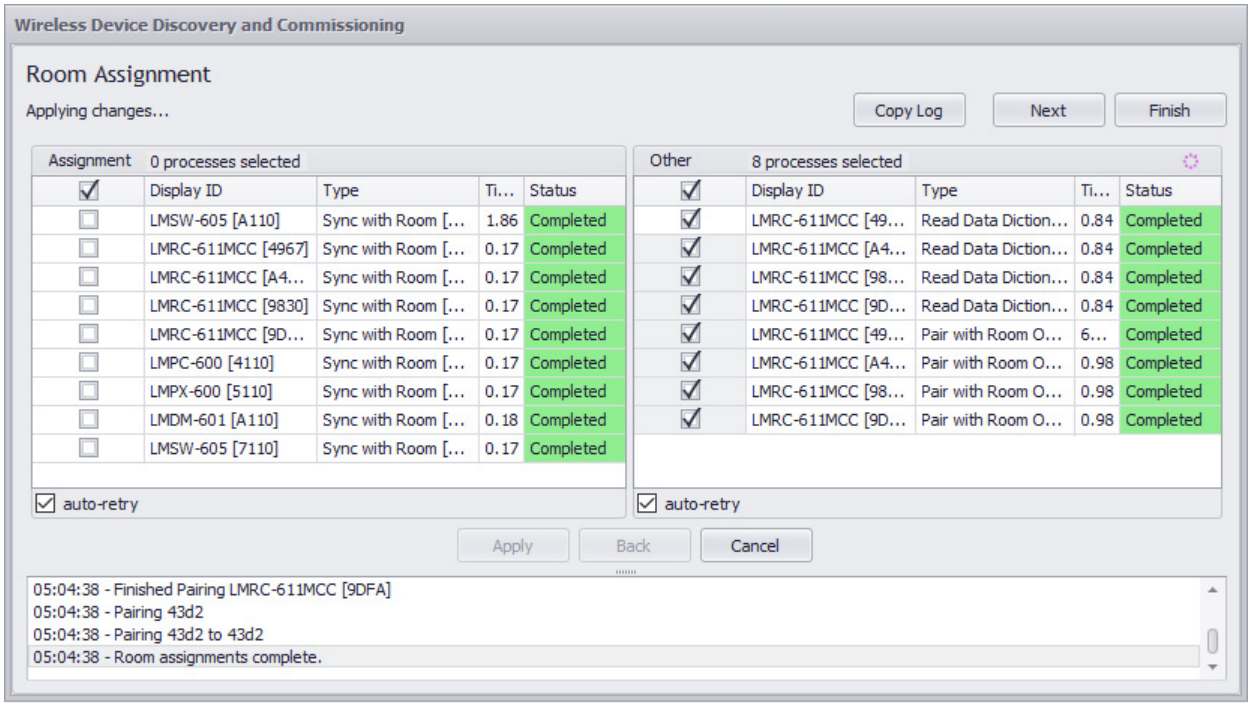


20. Once all devices have been assigned, click **Next**. LMCS displays a summary of the devices that will be paired. Click **Apply.**



21. The status bar at the bottom shows the pairing process. Once the process completes, click **Next** or **Finish.**

    IMPORTANT: If there is more than one LMBR and you still need to assign, click **Next**. **Do not click Finish until all LMBRs and devices have been configured and assigned.** Clicking **Finish** ends the configuration wizard.

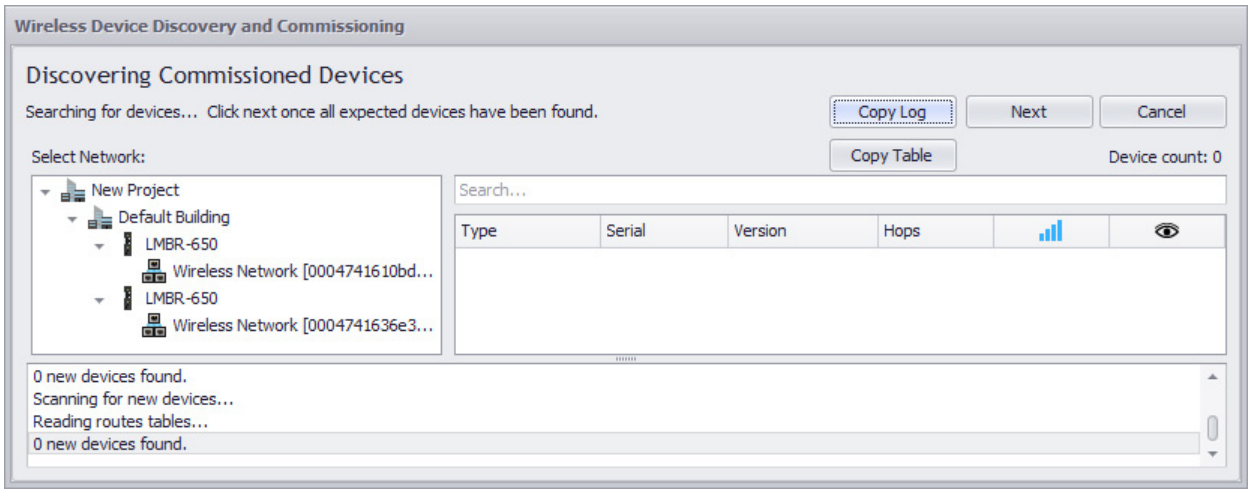


22. If you clicked **Next** in the previous step**,** you return to the **LMBR Selection** dialog (step 7), where you can repeat the process for additional LMBRs—selecting a specific LMBR and then selecting the specific devices you want to assign to that LMBR. The devices you assigned to previous LMBRs will **not** show up in the list of devices on the **Uncommissioned Device Discovery and Network Assignment** dialog, because they have already been moved off of the default Network ID Channel.

    NOTE: You may need to wake up any unconfigured battery devices again, if too much time passed from the last time you woke them up.

23. If you selected the **Discover commissioned devices** checkbox on the **LMBR Selection** dialog (step 14), the **Discovering Commissioned Devices** dialog opens (skipping steps 15-22). This displays all devices that were previously commissioned (set to the Network ID and Channel of the network you just selected).

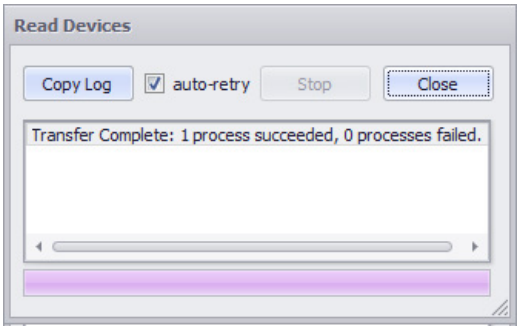
Discovering Commissioned Devices



If there are devices in the list that are not part of the current LMCS project file, they will be added, When you click **Next**, you will go directly to the **Room Assignment** dialog, where you can pair these addtional devices to a room. At that point, you can click **Next** or **Finish**. If you still need to Discover uncomissioned devices, or if you still need to run dsicovery for other networks, click **Next** to go to the **Uncommissioned Device Discovery and Network Assignment** dialog (step 15). If there is nothing else to discover, click **Finish**.

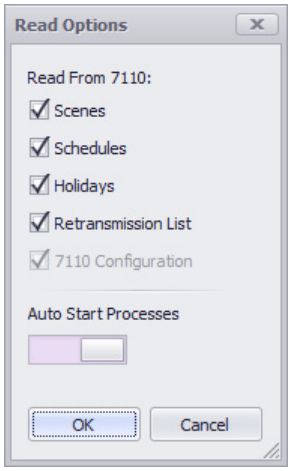
24. Once all LMBRs have been configured and you click **Finish**, the final step in the Discovery process occurs. You return to the **Discover Networks** dialog. Click **Close.** The **Read Devices** dialog opens. LMCS reads various information from the LMBR. For a new site, this information will always be empty—this only applies in the case of an existing site in which discovery is being run again to capture new devices. Click **Close** to finish Discovery.

Read Devices



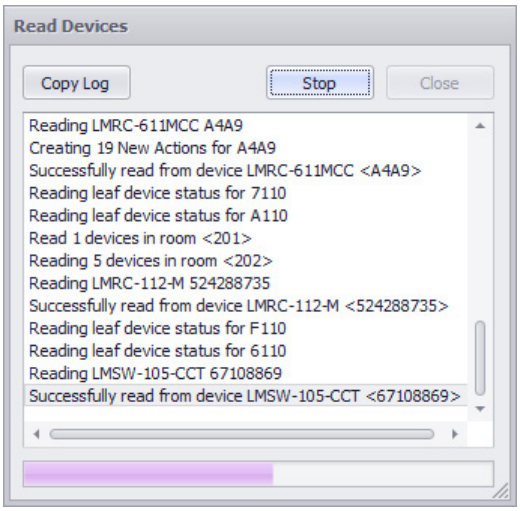
25. Wattstopper recommends at this point that you read information from all devices in the project. This will read in the default wireless scenes that are created automatically when devices are paired, along with any other current values for device parameters. Click **Read** in the **Commission** section of the top ribbon. The **Read Options** dialog opens. Leave all checkboxes selected.

Read Options

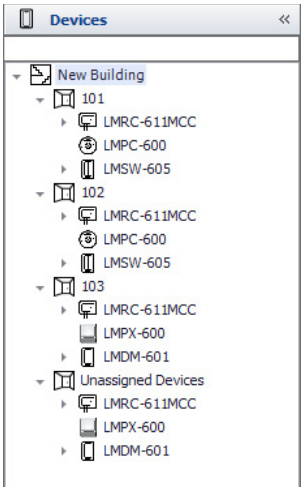


26. Click **OK**. The **Read Devices** dialog displays the progress of the read and a log provides information. When the read is complete click **Close**.

Read Devices



27. If you expand the Devices Tree now, you will see the rooms you created and the devices assigned to those rooms. If any devices were not assigned to a room during discover, it will be included in a special “room” labeled Unassigned. You can also see a list of these devices if you click the **Unassigned** tab at the bottom of the tree.

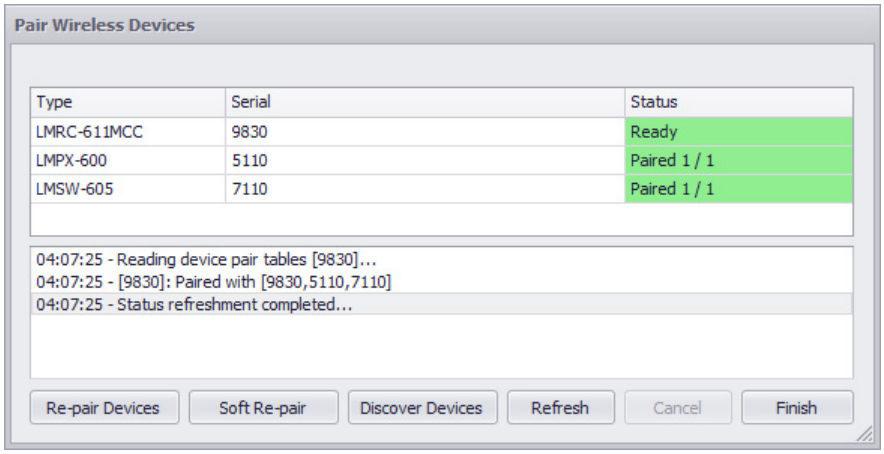


ADDING UNASSIGNED DEVICES TO A ROOM AND PAIRING THEM

If you did not assign all devices to a room during the discovery wizard, or if you have added additional devices and discovered them after having assigned other devices, you can easily add them to a room and pair them.

1. Highlight the desired devices within the Unassigned Devices “room” and drag them into the desired room. This can be an existing room or a room you just created in the tree.
2. Highlight the room you just dragged the devices into and click the **Wireless Device Pairing** button in the top section. A dialog opens and LMCS checks the status of the devices. While checking the status, the **Status** column will display “Unknown” in yellow. Once the check is complete, the status changes to green for paired devices, the controller status will display “Ready” and the battery devices will show that they are paired.

Pair Wireless Devices



3. If any devices are not paired and the status displays as yellow or red, click **Re-pair**. The status of the controllers will turn yellow, then red, as they are unpaired, and then pairing process starts. Once all devices are green, pairing is complete.

   Clicking the **Discover Devices** button will allow you to discover devices that were previously paired using the manual Push-to-Pair method or the DLM Config App, so you can re-pair them.

NOTE: It is also possible to move previously paired devices from one room to another, by using the same process of dragging them to the new room and then clicking **Wireless Device Pairing**.

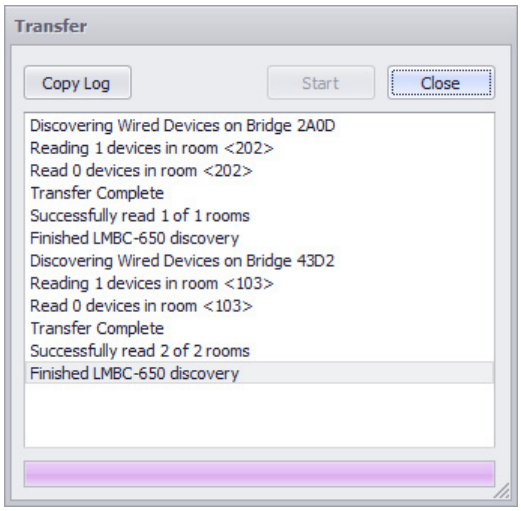
DISCOVERING WIRED DEVICES CONNECTED TO AN LMBC-650

If you have one or more LMBC-650 bridges in your network, the wired devices connected to those bridges are not discovered during the wireless discovery process. There are two possible methods for discovering the wired devices.

- Discover all wired devices connected to all LMBC-650s within a single area or within the entire building, in one process
- Discover the wired devices connected to a single LMBC-650

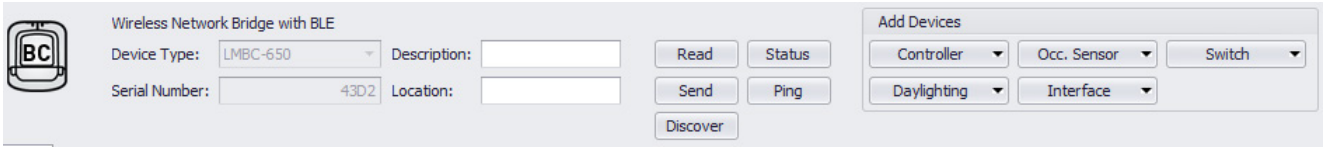
To discover all the wired devices, highlight the building or an area in the Devices tree, then click **Discover Hybrid Rooms** in the information section. A dialog opens and discover begins immediately.

Discover Wired Devices



Once the “Finished LMBC-650 discovery” message displays, click **Close**. The wired devices will now show up under the LMBC-650 in the tree and can be edited like any other wired DLM devices.

To discover wired devices that are connected to a single LMBC-650, select the LMBC-650 in the Devices tree and click **Discover** in the information section.

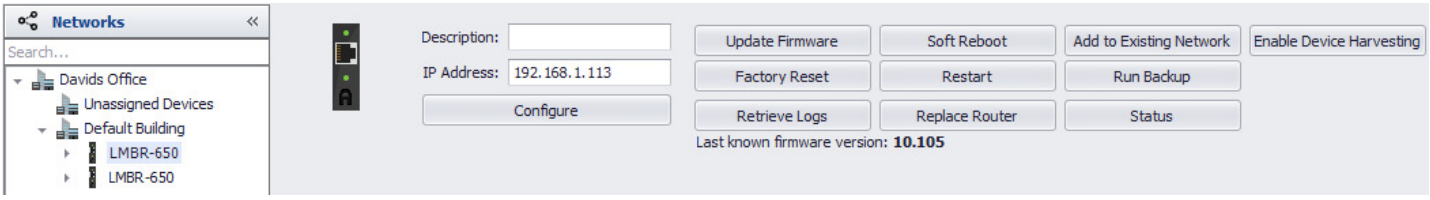


NOTE: It is also possible to manually add devices under the LMBC-650 by selecting them from the **Add Devices** section of the LMBC-650 information area. In this case, you will need to enter serial numbers and device IDs and synchronize the devices, the same as you would for wired devices in a project that was created off-line. See the LMCS-100 Operation Manual for details.

VIEWING LMBR-650 AND WIRELESS NETWORK INFORMATION

If you select the **Networks** tab, each LMBR-650 that has been discovered will display in the Networks tree.

LMBR-650 Information



You can enter a **Description** and it will display in the tree. The **IP Address** can be edited, but if you do so, it would need to be changed on the LMBR, so it is recommended you do not change it here.

If you click **Update Firmware**, a dialog opens displaying the version of firmware that was included when the current version of LMCS was installed. It will also check and display the version in the LMBR itself, allowing you to update if a newer version has become available.YOu can then **Copy to**

IMPORTANT: If you click **Factory Reset**, the LMBR will be reset back to default values. Not only will the Network ID and Channel be set to defaults, but the security certificate will also be deleted. You must then create a **new** Site and rediscover the LMBR—you will **not** be able to use your existing site. Therefore, use caution with this function.

The **Retrieve Logs** button will display the most recent logs from the border router. It shows profile assignments, tag attributes, multi-LMBR data, the route table, routes, the most recent 20 events from event.log, the last 200 lines of callLog.txt, and the last 50 lines from lighttpd_error.log. You can then copy thi information to the clipboard or save it as a text file.

The **Soft Reboot** button will reboot Contiki on the border router. It is most useful if the LMBR stops communicating with devices but is otherwise responsive.

The **Restart** button will restart the LMBR-650. It is essentially the same as power cucling the LMBR-650.

The **Run Backup** button is only displayed for the primary (master) border router in a multi-LMBR setup (or in a single LMBR setup). On a weekly basis, every Sunday at 3AM, the border routers will run a backup of each other in order to make replacement possible. However, you can use this function to manually initiate the backup for all routers. LMCS only reports that the backup command was successfully sent. It does not wait for the backup to successfully complete.

NOTE: Wattstopper **strongly** recommends that an initial backup is run after the site has been commissioned and before the startup technician leaves.

The **Add Existing Network** button has two separate functions:

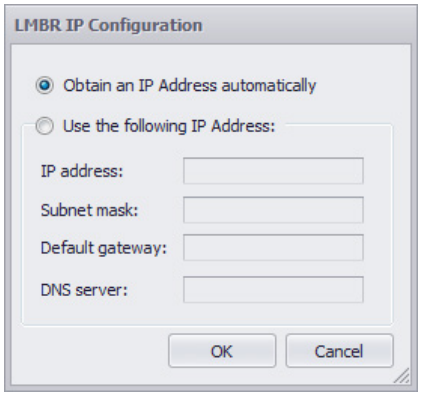
- It is used if you have a wireless room that was originally paired using the manual Push-to-Pair method or the Quick Pair method in the DLM Config App. For details, see "Adding Devices Previously Paired with Push-to-Pair or the DLM Config App" on page 18.
- It can also be used if you need to replace the router for a site that has only a **single** LMBR-650, for situations in which the original router has developed a problem or was reset. By using this function, you won't need to reset the other devices and re-run discovery. Note that the new LMBR-650 cannot already have any devices attached to it before you run this function. For details, see "Replacing the LMBR-650 in a Single LMBR Network" on page 26.

The **Replace Router** button is used if you need to replace a router in a site with **multiple** LMBR-650s. There must be at least one functioning router on the site that contains the backup files for the other routers. For details, see "If Replacing or Resetting an LMBR-650" on page 25.

If you click the **Configure** button, a dialog open that allows you change the IP address and other connection parameters, for Static IP configuration.

At default, the LMBR-650 is configured for DHCP and requires DNS to provide it with a IP address before you can even connect to it. Therefore, all LMBR-650s (as well as the computer) must be connected to a router when you initially discover it within LMCS. If you do not plan to have the router permanently connected to the network, you must switch the LMBR-650 to a static IP address, once it has been discovered. If there are multiple LMBR-650s, set each one to a different IP address and they will all be able to communicate both with LMCS and with each other.

LMBR IP Configuration

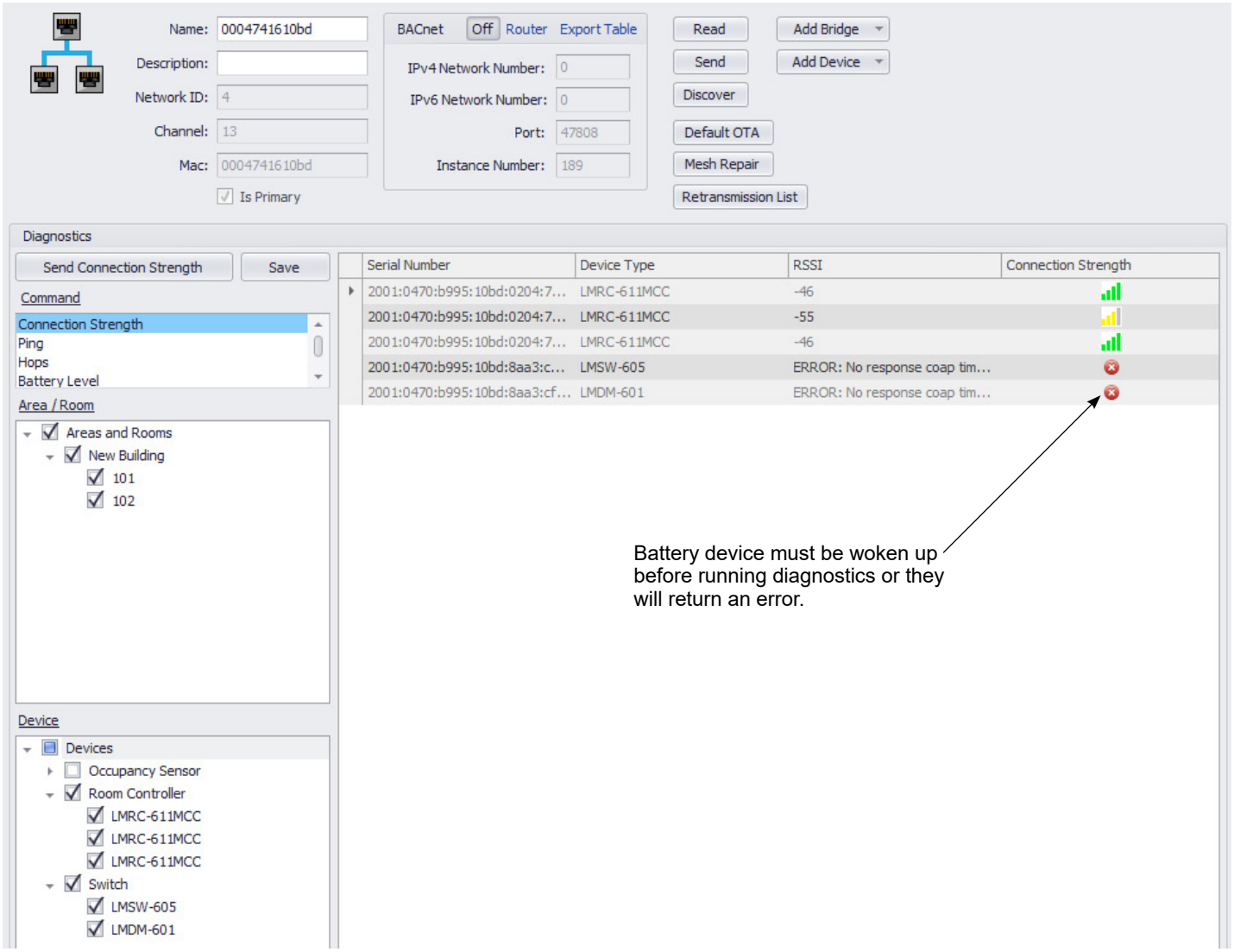


You can obtain the IP address automatically, or select "Use the Following IP Address" to manually enter all of the details.

NOTE: You will need to rediscover the LMBR after changing the values.

If you expand the tree to show a wireless network and highlight it, the Info section displays information about the network and provides a few useful tools.

Wireless Network Information



You can enter a **Description** for the network and it will display in the tree. The **Network ID** and **Channel** used for wireless communication are set during the wireless configuration wizard and cannot be changed here.

It is possible to manually add wireless devices to a network with the **Add Bridge** and **Add Device** buttons. However, at this time, there is no practical use for this function because wireless devices must be added through discovery in order to work properly.

Changing the Primary LMBR-650 in a Multi-LMBR Project

In a project with multiple LMBRs, one LMBR will be designated as the primary LMBR. If viewing the network of the primary LMBR, the **Is Primary** checkbox will be selected and disabled. To choose a different LMBR to be the primary, highlight the Network of that LMBR. In this case, the **Is Primary** checkbox will be enabled. Simply click the checkbox to make the change.

NOTE: The primary LMBR is used to store wireless schedules, so if you change the primary from one LMBR to another, you must resend the schedules from LMCS to the new primary LMBR. See the LMCS-100 Operation Manual for details.

BACnet Information Section

By default, BACnet is disabled, on the LMBR, but if you click **Enabled**, you can enable BACnet and edit the values of the parameters.

NOTE: When you click **Enable**, a security disclaimer pops up, which you must agree to before proceeding.

NOTE: When setting up the BACnet settings on the LMBR, the IPv4 value and IPv6 value should not be the same. If they are the same, the LMBR-650 will not be able to properly access the points from an LMBC-650 for the BACnet export tables.

IPv4 Network Number – BACnet number for IPv4 communication. The default value is 0 but can be changed. However, all LMBRs and all profiles in the installation must use the same number if there is a single network controller or the network controller is not used. If there is more than one network controller, each one will have its own BACnet number. All profiles assigned to routers and bridges must use the same number that has been configured on the network controller.

IPv6 Network Number – BACnet number for IPv6 communication. Each LMBR must use a unique number.

Port – This number must match the number you set in the **Preferences** dialog, accessed from the **Support** tab The default number is 47808.

Instance Number – This number must be unique for each individual device in a BACnet network.

NOTE: You must click **Send** after enabling BACnet and setting the parameters in order for BACnet to be enabled on the LMBR.

Using the Diagnostics Section to Check and View Network Information.

The bottom section of the window provides the ability to check network information for one or more devices in the network.

1. Choose a network test to run. These include:
   - **Connection Strength** – Returns the RSSI value and shows signal strength in number of bars.
   - **Ping** – Returns the serial number of the device and shows the response time in milliseconds.
   - **Hops** – Returns the serial number of the device, the network ID, and the number of devices the signal passes through to reach the target device.
   - **Battery Level** – Returns the serial number, device type and battery level. Room controllers and bridges will display a value of 0% since they have no battery.
   - **Last Known Battery Level** – Battery levels of the devices are stored in the room controller, and this diagnostic will show the battery level that is stored in the room controller. Therefore, to run this test, **select the room controller and not the battery devices**. Returns the serial number, device type and battery level.
2. Expand the **Area/Rooms** tree and Select one or more areas or rooms. Then expand the **Devices** tree and select either a device type or individual devices within the device type.
3. Click **Select Devices**. Messages are sent to the devices and the information is displayed once received.
4. Click **Save** if you want to save the results to a text file, for diagnostic purposes.

NOTE: Battery Devices must be woken up before they will respond to these tests.

DISCOVERING NEW ROOMS OR DEVICES IN A PREVIOUSLY DISCOVERED NETWORK

Another application in which online discovery might be used is in a situation where a large project was previously created, but a room has been added at a later point, or extra devices added to an existing room, or a malfunctioning device is replaced with a different device.

NOTE: For wireless networks, if you are adding devices that were previously paired using the manual Push-to-Pair method or with the DLM Configuration App, you must use a special process to add them to the network. See the following section for details.

NOTE: If replacing an LMBR-650 as opposed to replacing a malfunctioning room controller, sensor or switch, the process is different. See "If Replacing or Resetting an LMBR-650" on page 25.

For Wireless Networks

For a wireless network, you must run the Wireless Discovery process again to discover the new or replaced devices, but a few steps are left out.

When discovering an already configured wireless network, you skip the step where you select the Network, ID and Channel, since they were previously chosen. Once you get to the step where you can view uncommissioned devices, any new devices which are set to the default network ID and channel will be listed. Select the desired devices to move them to the network. You then proceed assigning the new devices to rooms, where you can assign them to an existing room or create a new room for the devices. Once discovery is complete, delete any replaced devices from the devices tree.

NOTE: You can also use the process above to re-connect existing devices to the network if they had to be reset (which results in the network ID and channel being set back to defaults). Once the devices have been reassigned to the network, there is no need to do any room assignment since they already exist in the room in the project file. If the device you reset is one of the switches or sensors, there is no need to re-pair the device in the room, because the pairing information is stored in the room controller. But if the room controller was reset, then you will need to re-pair all devices in the room.

ADDING DEVICES PREVIOUSLY PAIRED WITH PUSH-TO-PAIR OR THE DLM CONFIG APP

This section covers a situation in which a room was previously paired using Push-to-Pair or the DLM Config App and you now want to add those devices to your LMCS project by connecting an LMBR to those devices.

NOTE: If you used the DLM Config App to pair devices in a room, this process will **only** work if you used the **Quick Pair** function, which creates an unsecured network. If you created a secured site with the DLM Config App, this process will not work. To bring the devices from that site into LMCS, you will have to reset all those devices and then use the regular discovery process to add them into the LMCS project.

NOTE: In order to perform this process you will need physical access to one of the devices in the room in order to manually put all the devices in the room into Push-to-Pair mode, or you can use the DLM Config App to do the same.

You must have an additional, temporary LMBR-650 to complete this process. The temporary LMBR, which you will use to connect to the previously paired network, must **not** have any devices currently assigned to it. After bringing in the new devices into LMCS, you will move them from the temporary LMBR to one of the permanent LMBRs in the site.

Since each room created using PtP or the DLM Config App is a separate network, if there are multiple rooms that you want to add to LMCS, you must repeat this process for each room.

For the temporary LMBR, you must first Discover that LMBR and add it to the LMCS project so that it will appear in the Networks view in the tree. See steps 1-4 in the section "Network/Device Discovery and Device Pairing Wizard" on page 4. Once the LMBR has been added, click **Close** to end the Discover wizard. You can then proceed with the following steps.

IMPORTANT: When configuring the LMBR during Discovery, you **must** use the **Default** settings (do **not** select Configure to enter custom values for the Network ID and Channel on the **LMBR Network Configuration** dialog).

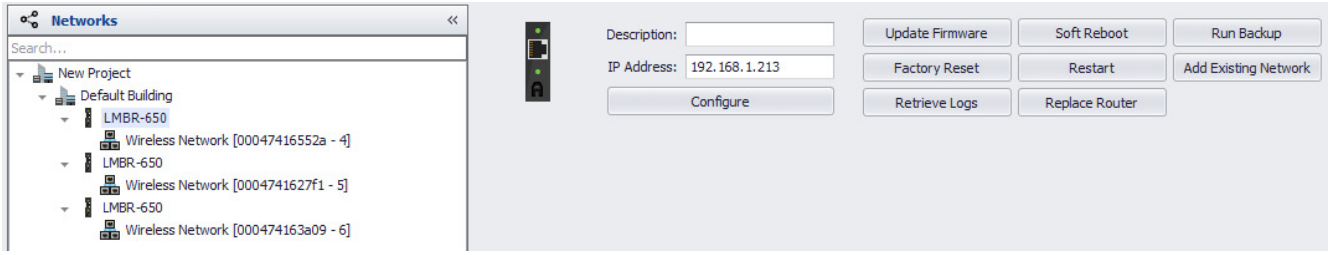
Bringing Previously Paired Devices into LMCS

There are two different situations that apply when adding an existing network:

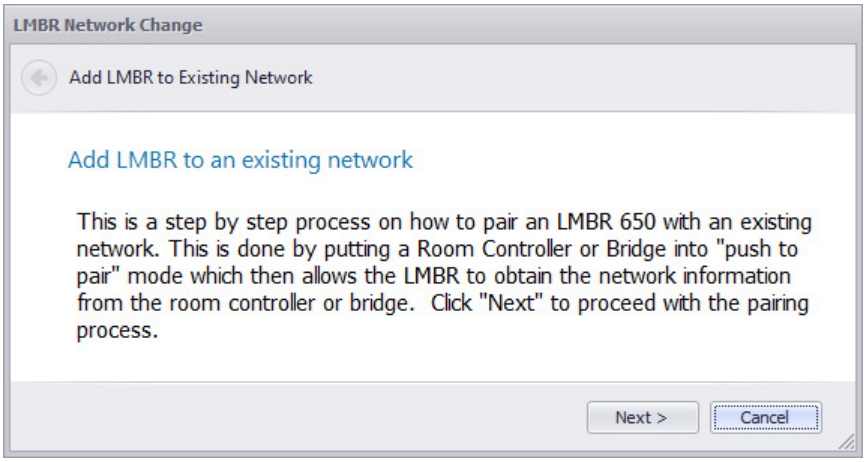
- You want to retain the load binding programming in the room originally created using Push n' Learn or Quick Pair in the DLM Config App.
- You do not need to retain the original load binding and instead will do this in LMCS.

The first set of steps are identical in both situations. Following those steps, the additional steps are separated for each of the two options.

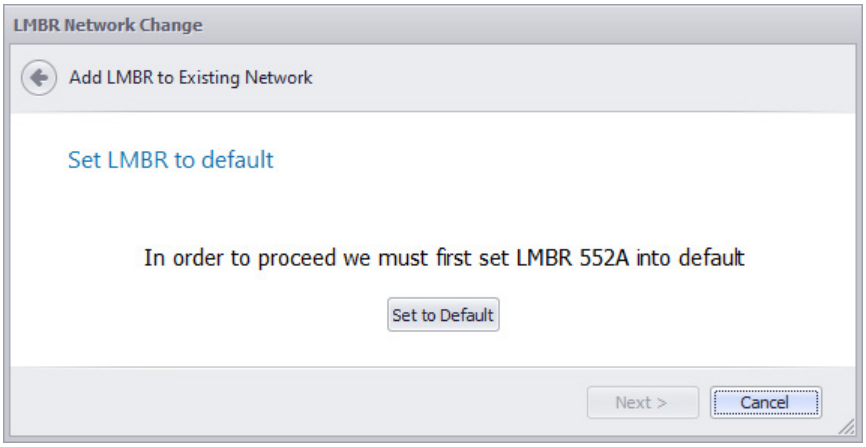
1. In the Network View of the tree, select the LMBR to be used for adding the existing network. As mentioned above, this LMBR must **not** have any devices currently assigned to it. Then click **Add Existing Network**.



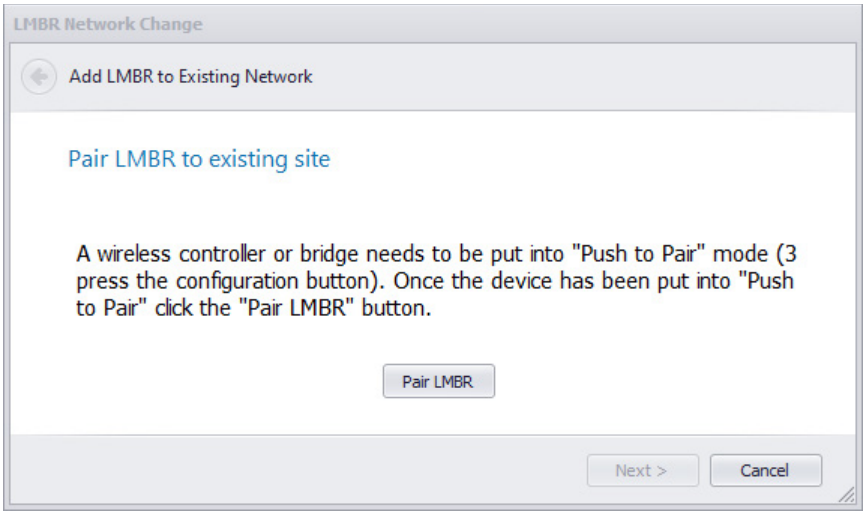
2. A wizard opens that walks through the steps necessary to connect the LMBR to the existing network. Click **Next**.



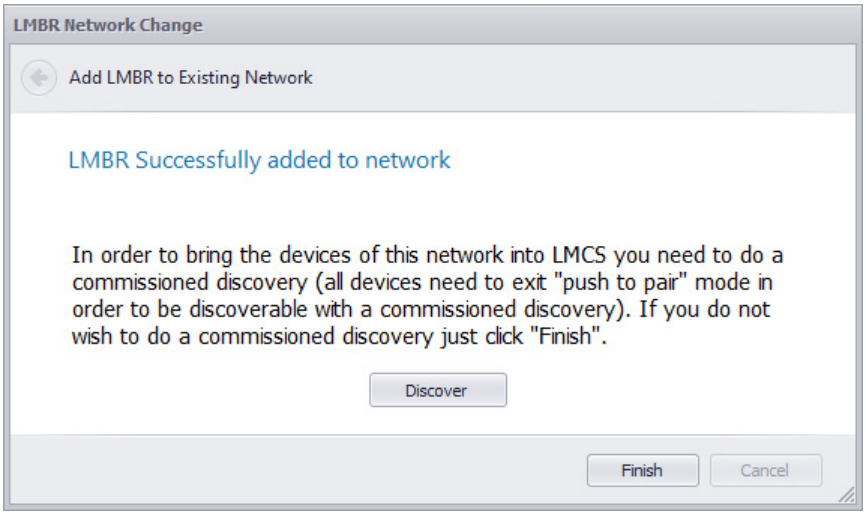
3. A prompt informs you that LMCS will put the LMBR on to the default network. Click **Set to Default**.



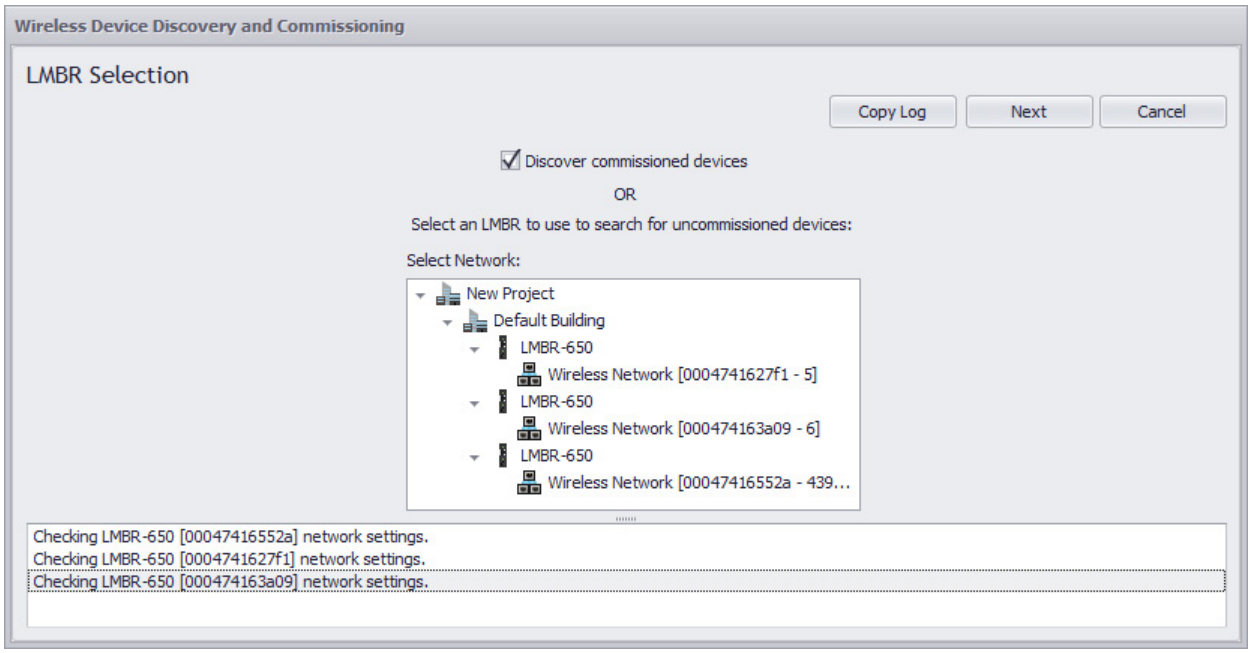
4. The wizard display the status as it attempts to set the LMBR to default. When complete, click **Next**.
5. At this point a prompt appears informing you that you must put the room controller into Push-to-Pair mode, by pressing the Config button on **any** device in the room three times (within three seconds). The LED on the room controller and all other paired devices in the room that are awake will flash green. Then click **Pair LMBR**.



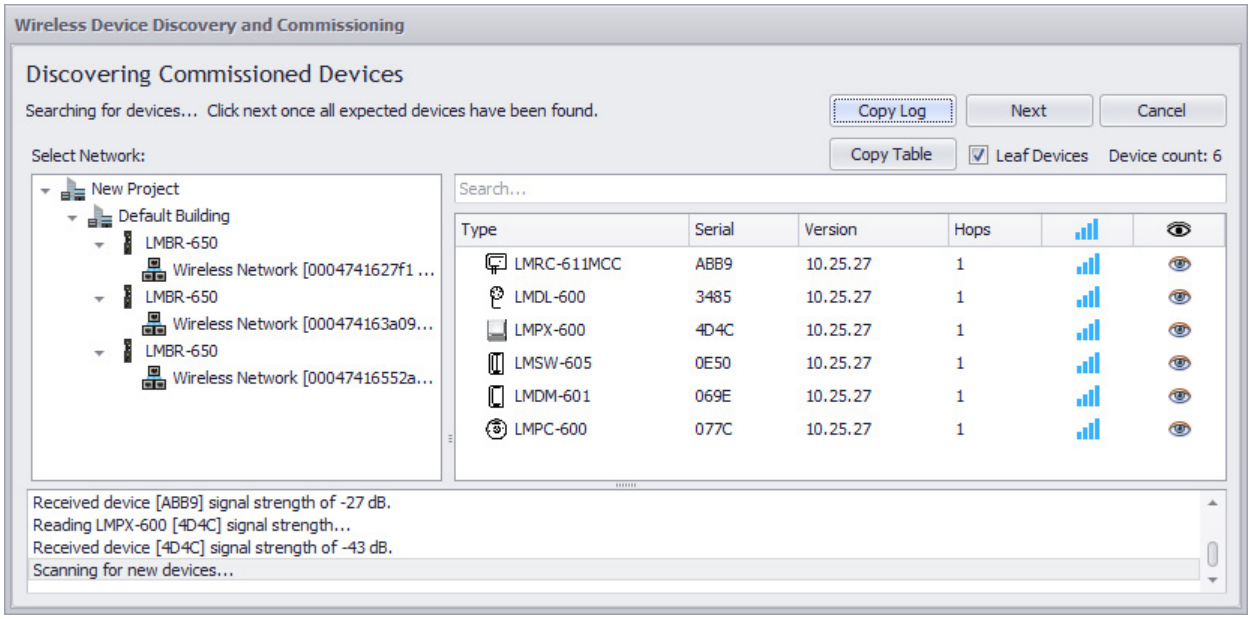
6. LMCS will then attempt to obtain the network key from the room controller and a message displays showing the status. When complete, click **Next**.
7. The prompt now informs you that the devices will need to be discovered. Before that can occur, the devices must exit Push-to-Pair mode. From any device, press the Config button 3 times. Once the devices exit Push-to-Pair, click **Discover**.



8. The **LMBR Selection** dialog opens. Make sure the **Discover commissioned devices** checkbox is selected, then click **Next**.



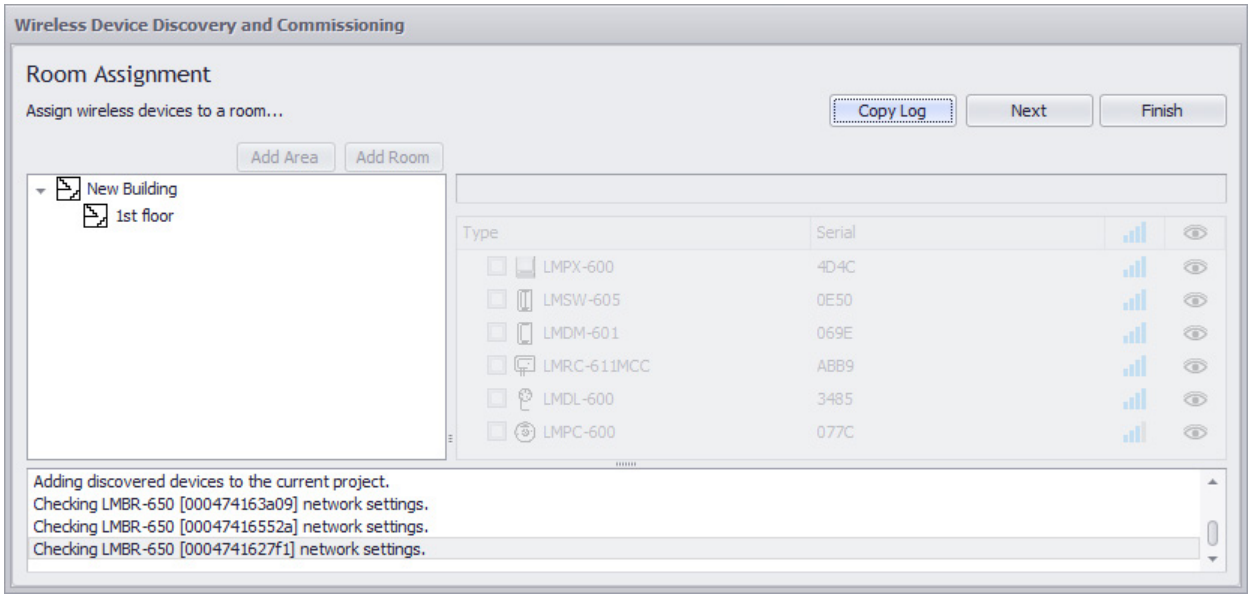
9. The **Discovering Commissioned Devices** dialog opens. The window will populate with all devices in the room. If any switch or sensor devices are not awake, you must wake them by pressing the Config button before they will appear in the list. Once all devices have been found, click **Next**.



Once you click **Next**, the **Room Assignment** dialog appears. At this point, the process varies, depending on whether you want to retain the load binding programming currently in the room or will do this in LMCS. The following two sections detail the steps for each option. If you are going to create load binding using LMCS, see page 22.

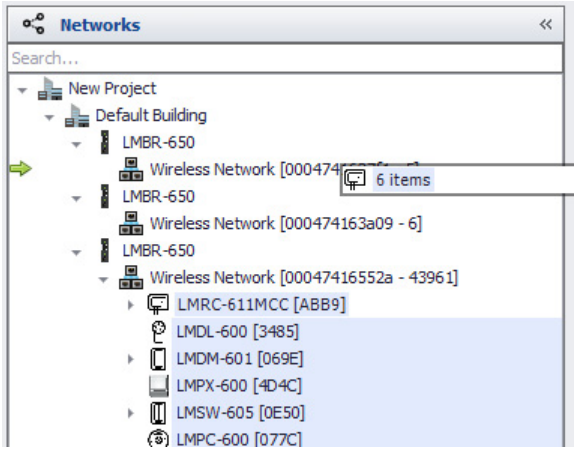
If Retaining the Load Binding from PnL or the DLM Config App

1. From the **Room Assignment** dialog, click **Finish**.

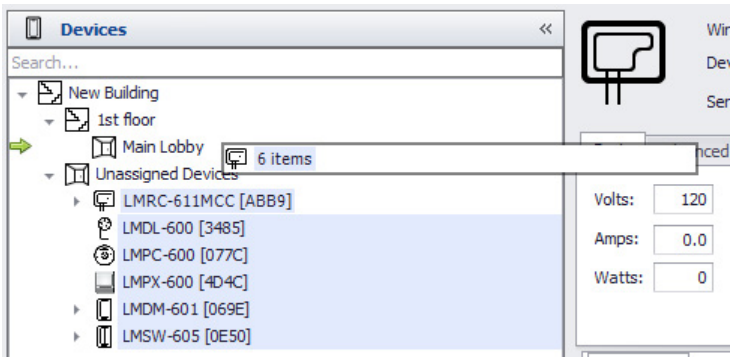


2. The dialog will close and all of the devices will be assigned to the Unassigned Devices category in the Devices View in the tree. The new devices also appear under the temporary LMBR in the Networks View.
3. You now need to move the devices to a different LMBR before you can discover and bring in the next network (room). Highlight each of the devices to be moved, then click and drag them on to the LMBR network that you would like to move them to. When prompted, select Yes.

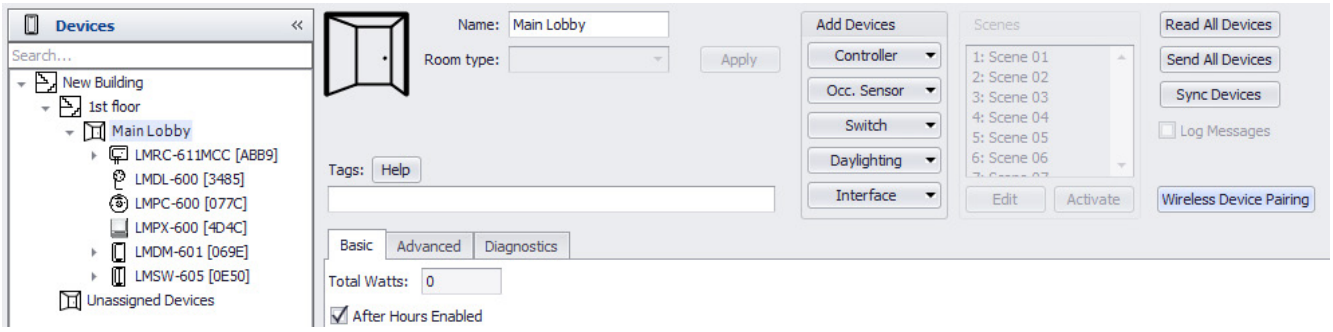
   NOTE: If you receive a warning that LMCS is unable to move a device, select **No**. Wake up the device and try moving it again.



4. Go to the Devices view. Add a new room in the tree (if needed, add an area and a room within that area). Then select all the devices under Unassigned devices and drag them into the new room.



5. Highlight the new room in the tree and click **Read All Devices**. A pop-up dialog shows the status of reading in the parameters from the devices. When complete, all of the binding will now be loaded into LMCS.

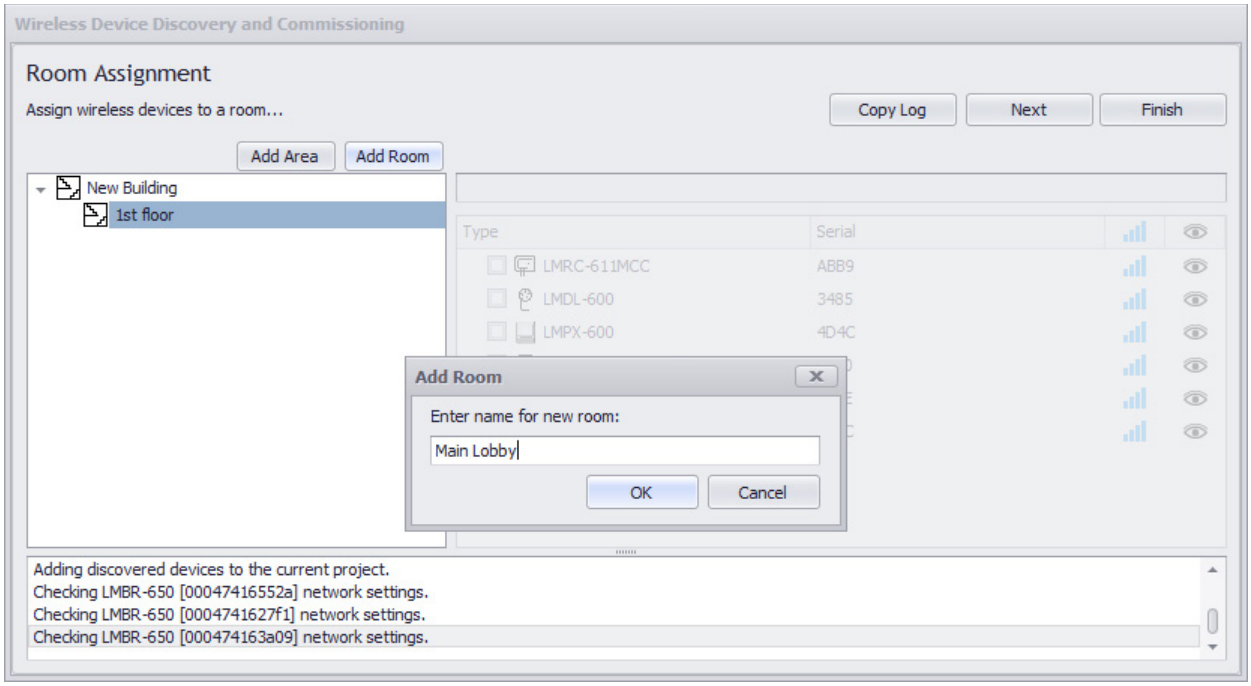


6. Repeat the entire process for each additional room that needs to be added, going back to the first LMBR and clicking **Add Existing Network**.

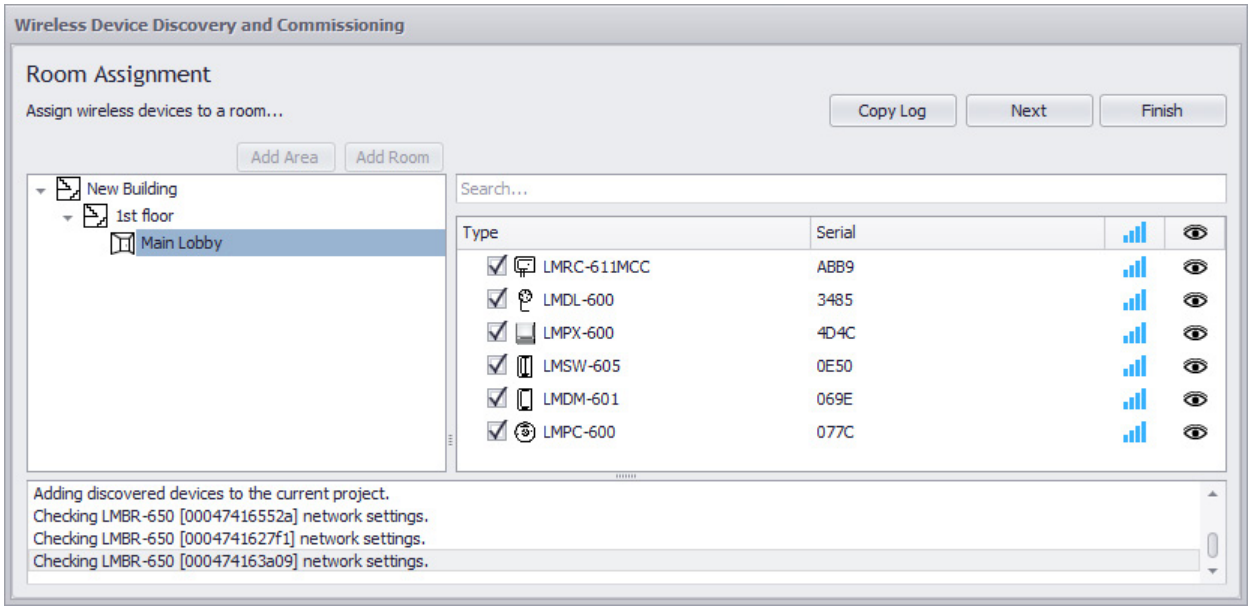
NOTE: For the temporary LMBR, you should perform a reset on it before disconnecting it so that it is uncommissioned and available for another use in the future.

If Creating Load Binding in LMCS

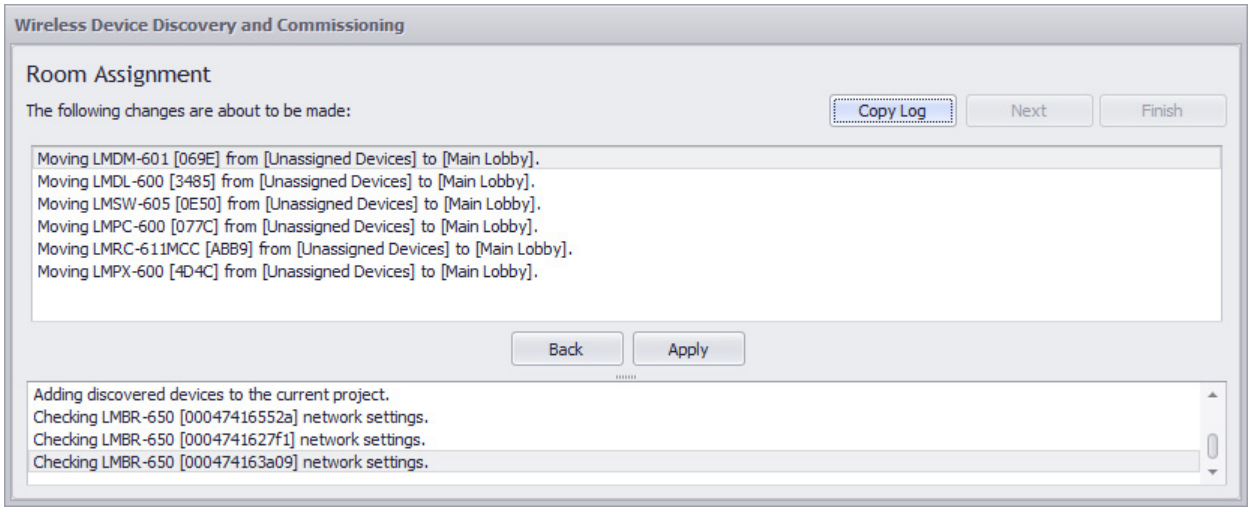
1. Continuing from step 9 in the first part of this process, once the **Room Assignment** dialog opens, click **Add Room**. Then enter the name for the room you want to place the new devices into and click **OK**. If needed you can create more than one room if you want to split the devices between rooms.



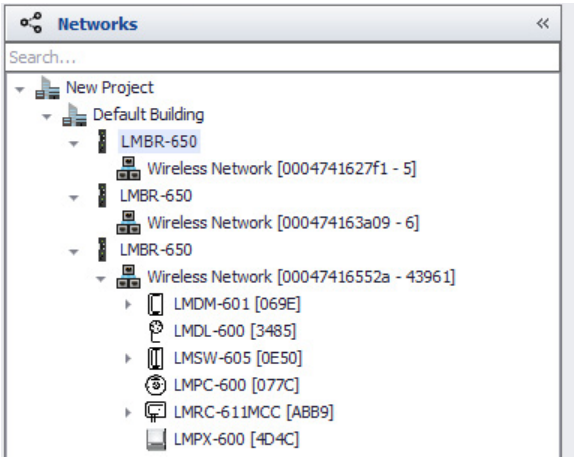
2. Highlight the room then select the devices to be moved to that room. If you created more than one room and selected only some of the devices, when you select the next room only the unselected devices will be available to move into the second room. Once all devices have been selected. click **Next**.

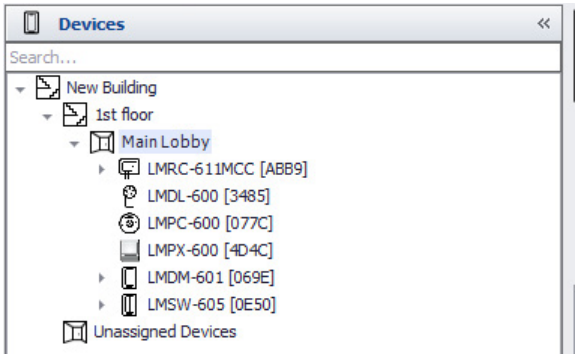


3. Click **Apply**. LMCS will move the devices into the room. The status bar at the bottom shows the progress of the move. Once the process is complete and all devices have been moved, the **Next** and **Finish** buttons are enabled. Click **Finish**.



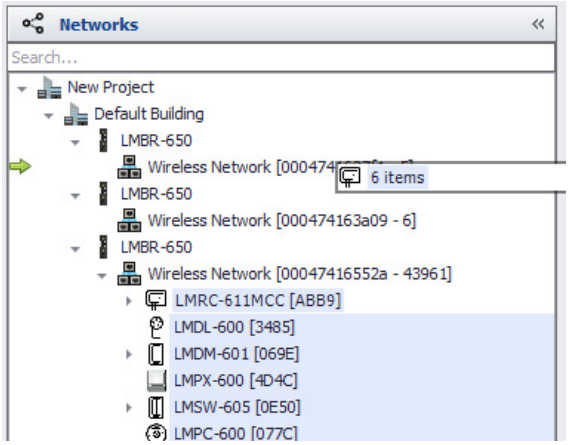
4. The new devices will now appear under the network of the temporary LMBR you used to add the existing network in the **Networks** view. They will also appear under the newly created room in the **Devices** view.





5. Now that the room has been added to LMCS, you will need to move the devices to a different LMBR before you can discover and bring in the next network (room). Highlight each of the devices to be moved, then click and drag them on to the LMBR network that you would like to move them to. When prompted, select Yes.

   NOTE: If you receive a warning concerning LMCS being unable to move a device, select **No**. Wake up the device and try moving it again.



6. Repeat the entire process for each additional room that needs to be added, going back to the first LMBR and clicking **Add Existing Network**.

NOTE: For the temporary LMBR, you should perform a reset on it before disconnecting it so that it is uncommissioned and available for another use in the future.

IF REPLACING OR RESETTING AN LMBR-650

If you need to replace a commissioned LMBR-650 for any reason (or if that LMBR was reset), highlight that specific LMBR in the tree, then click **Replace Router** if it is a multi-LMBR site or **Add Existing Network** if it is a single LMBR site. For a multi-LMBR site, you can replace either the primary or any secondary LMBR.

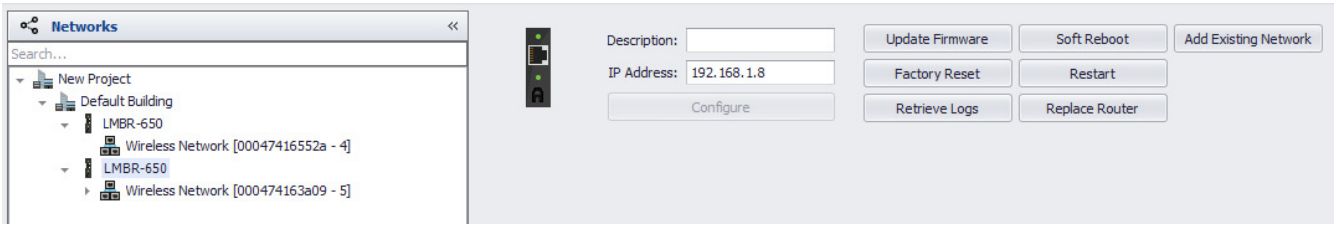
NOTE: Keep in mind that if the old or reset LMBR was set to a static IP address, you will need to add a router back into the network in order to communicate with the new or reset LMBR, since it will be set to DHCP. Be sure to set the LMBR-650 to static IP before completing the process. It is not necessary to use the same static IP address as was used previously.

Replacing an LMBR-650 in a Multi-LMBR Network

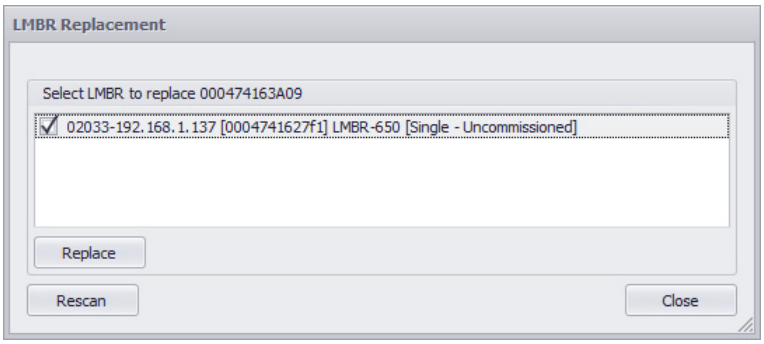
NOTE: All LMBRs in a multi-LMBR network automatically create a backup of the data in the other LMBRs every Sunday at 3 AM. So if you replace an LMBR, it will be loaded with the data from that previous backup. If any changes were made to that particular LMBR since the backup, the settings will need to be reprogrammed. This applies to things such as wireless schedules and scenes which are stored in the LMBR-650. You can manually run an LMBR network backup by selecting the Primary LMBR in the tree and then clicking **Run Backup**. This process takes about a minute to complete. Wattstopper recommends that you run a backup after the replacement process is complete.

NOTE:

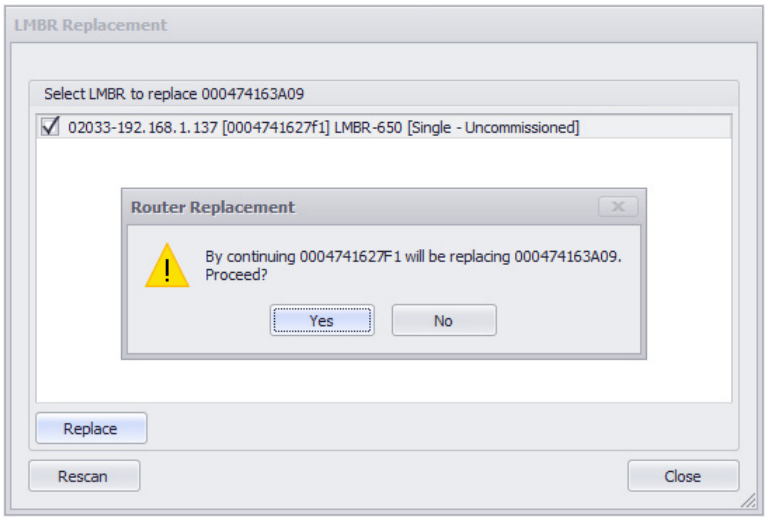
1. If an LMBR-650 needs to be replaced, disconnect it from the network and then connect an **uncommissioned** LMBR to the network. If an LMBR has been reset, it is now uncommissioned.
2. Select the **Networks** tab in the tree and highlight the LMBR that has been removed or reset (identified by its MAC address.



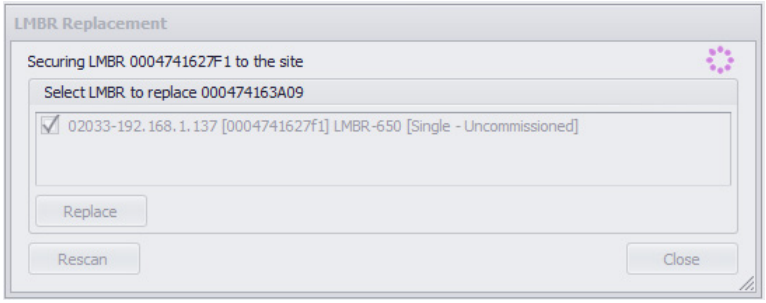
3. Click **Replace Router**. A dialog pops up and displays any uncommissioned LMBRs found on the network.



4. Select the LMBR if it is not automatically selected, and click **Replace**. A confirmation dialog pops up, identifying the two LMBRs by MAC address. Click **Yes**.



5. The dialog changes to show the status of the replacement process. Initially it will says “Securing LMBR xxx” and eventually says “Success” upon completion. When finished, click **Close**.



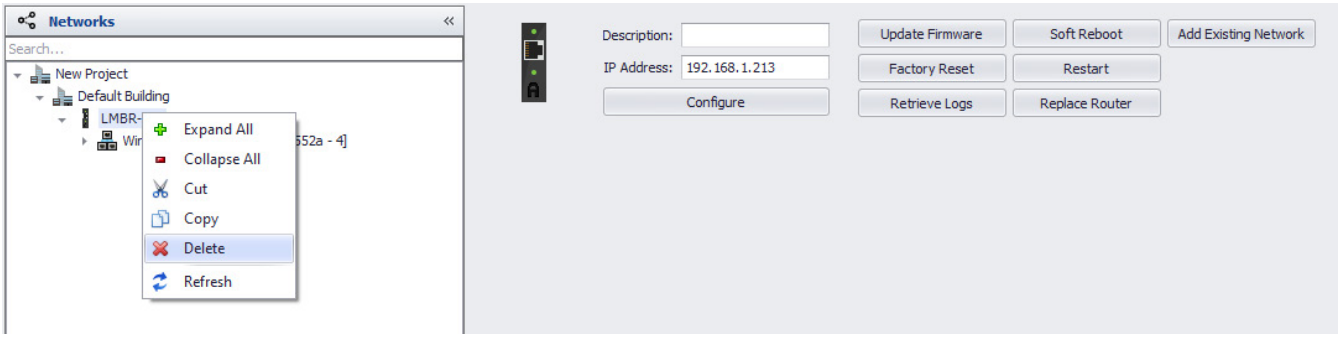
NOTE: If you are replacing the primary LMBR, the new LMBR will automatically become the primary.

NOTE: You can use this same process if an LMBR was reset but not replaced. The only difference is that the same MAC address will display for the original and "replacement" LMBR.

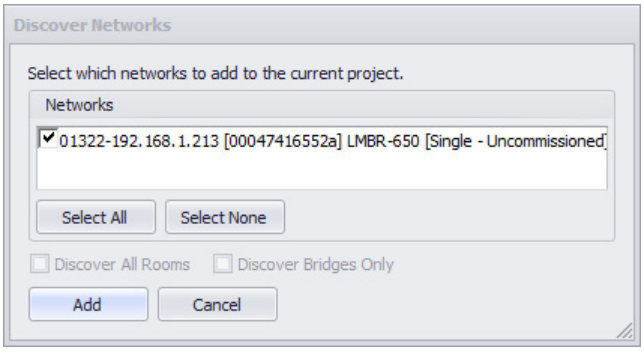
Replacing the LMBR-650 in a Single LMBR Network

There are two parts to this procedure. The first part is to discover the new LMBR-650 or the existing LMBR if it was reset. The second part is to use the Add Existing Network function to connect the existing devices with the new/reset LMBR.

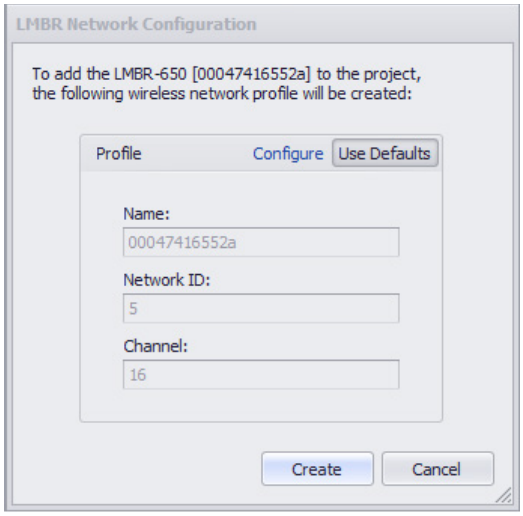
1. Highlight the current LMBR in the **Networks** view, then right-click and select **Delete**. Then click **Yes** to confirm.
   NOTE: You must do this step even if you are going to rediscover an existing LMBR that was reset.



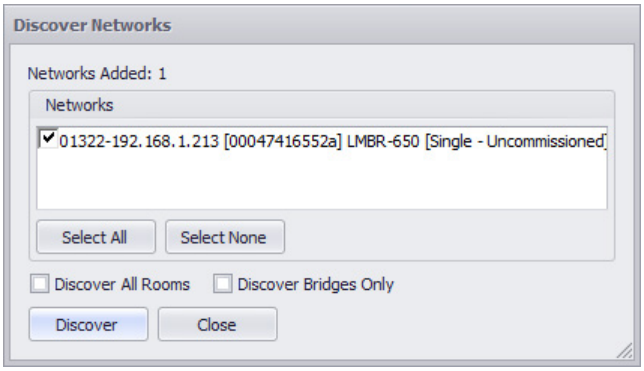
2. If replacing the LMBR, connect the **uncommissioned** LMBR to the network. (This can be done before step 1 if desired.)
3. Return to the **Devices** view and click **Discover**. LMCS will display the uncommissioned LMBR.



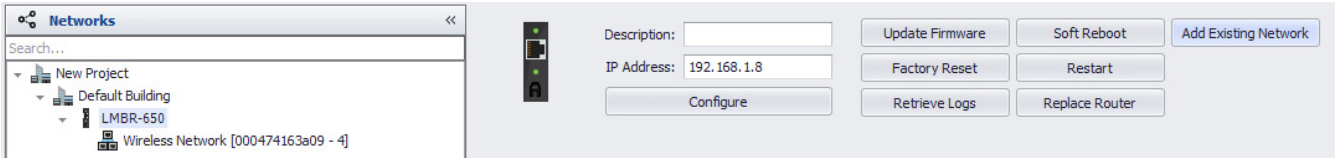
4. Click **Add**. A new dialog pops up that allows you to select the **Network ID** and **Channel** the LMBR will use to communicate with the wireless DLM devices. It will pick a couple of numbers automatically. The **Name** used to identify the LMBR will be set to the MAC address of the LMBR. If you want to change either or both of the numbers or create a custom name, click **Configure** and the fields will be enabled for editing. If you click **Use Defaults**, the fields are disabled and set to the values chosen by LMCS. You do **not** need to use the Network ID and Channel that was previously used.



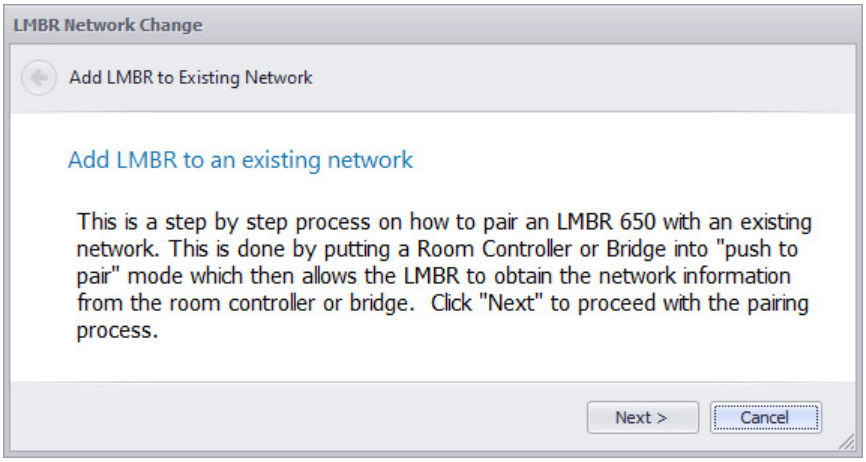
5. Click **Create**. You return to the **Discover Networks** dialog. Click **Close**.



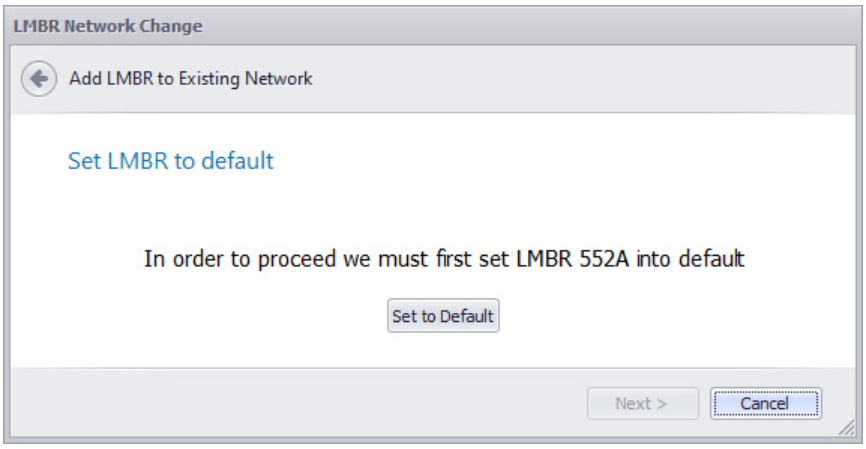
6. Return to the **Networks** view. Select the LMBR and click **Add Existing Network**.



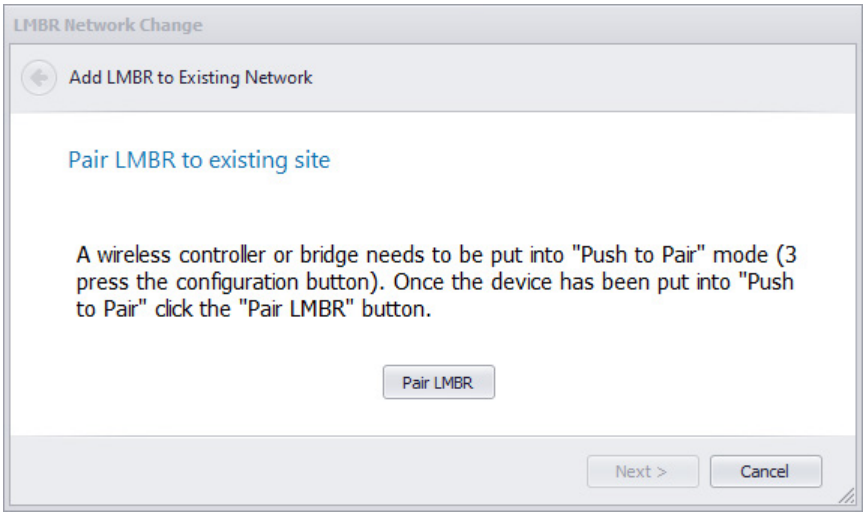
7. A wizard opens that walks through the steps necessary to reconnect the LMBR to your devices. Click **Next**.



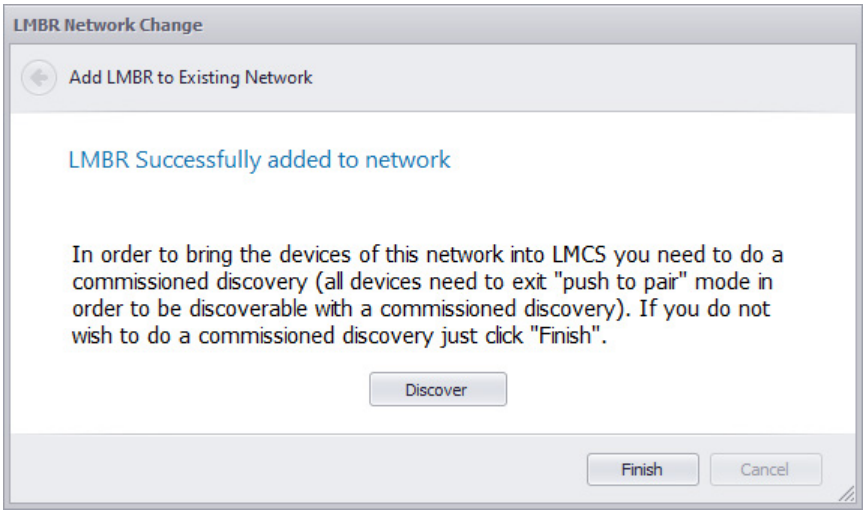
8. A prompt informs you that LMCS will put the LMBR on to the default network. Click **Set to Default**.



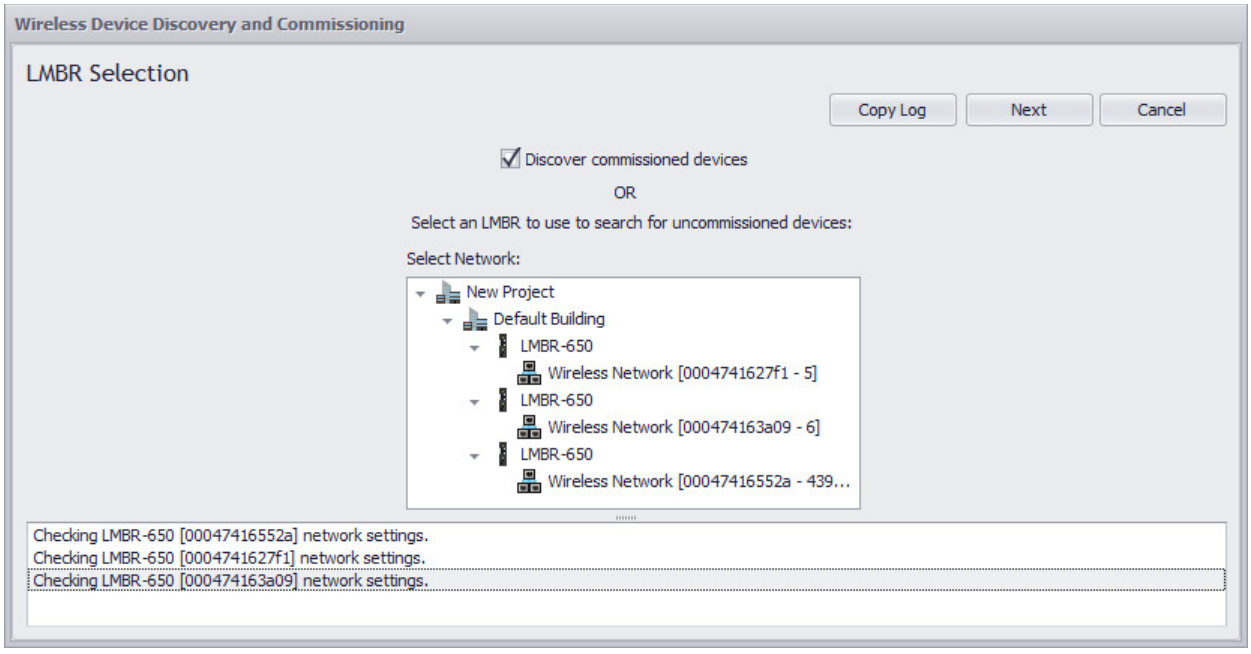
9. The wizard display the status at it attempts to set the LMBR to default. When complete, click **Next**.
10. At this point a prompt appears informing you that you must put the room controller into Push-to-Pair mode, by pressing the Config button on **any** device in the room three times (within three seconds). The LED on the room controller and all other paired devices in the room that are awake will flash green. Then click **Pair LMBR**.



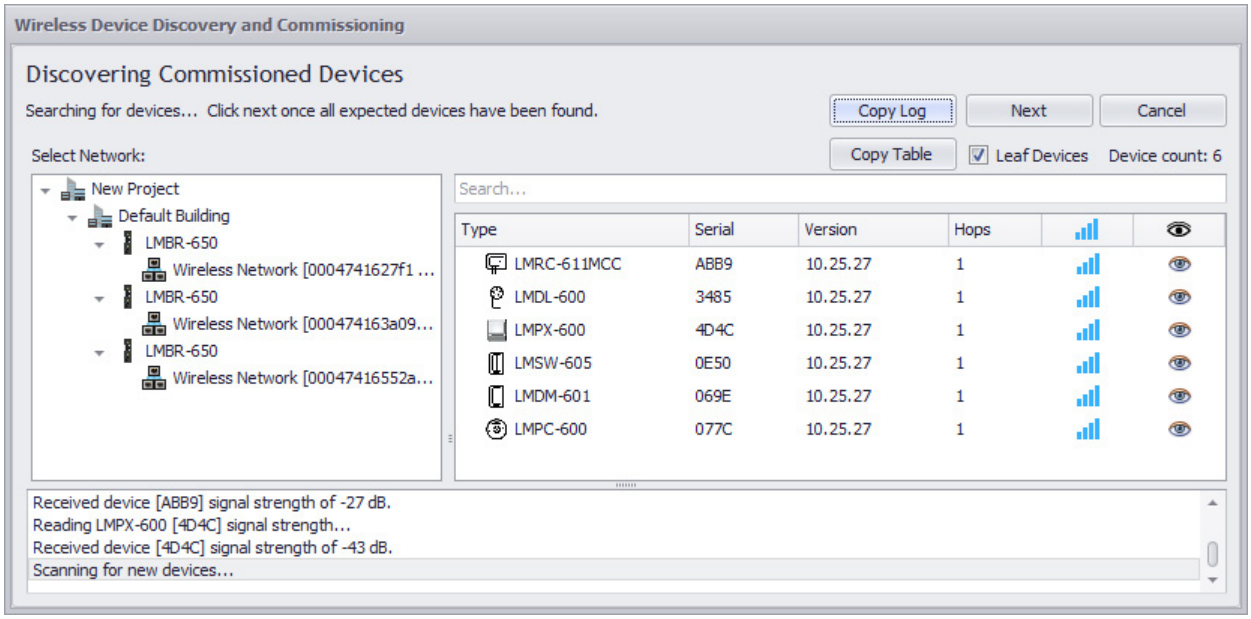
11. LMCS will then attempt to obtain the network key from the room controller and a message displays showing the status. When complete, click **Next**.
12. The prompt now informs you that the devices will need to be discovered. Before that can occur, the devices must exit Push-to-Pair mode. From any device, press the Config button 3 times. Once the devices exit Push-to-Pair, click **Discover**.



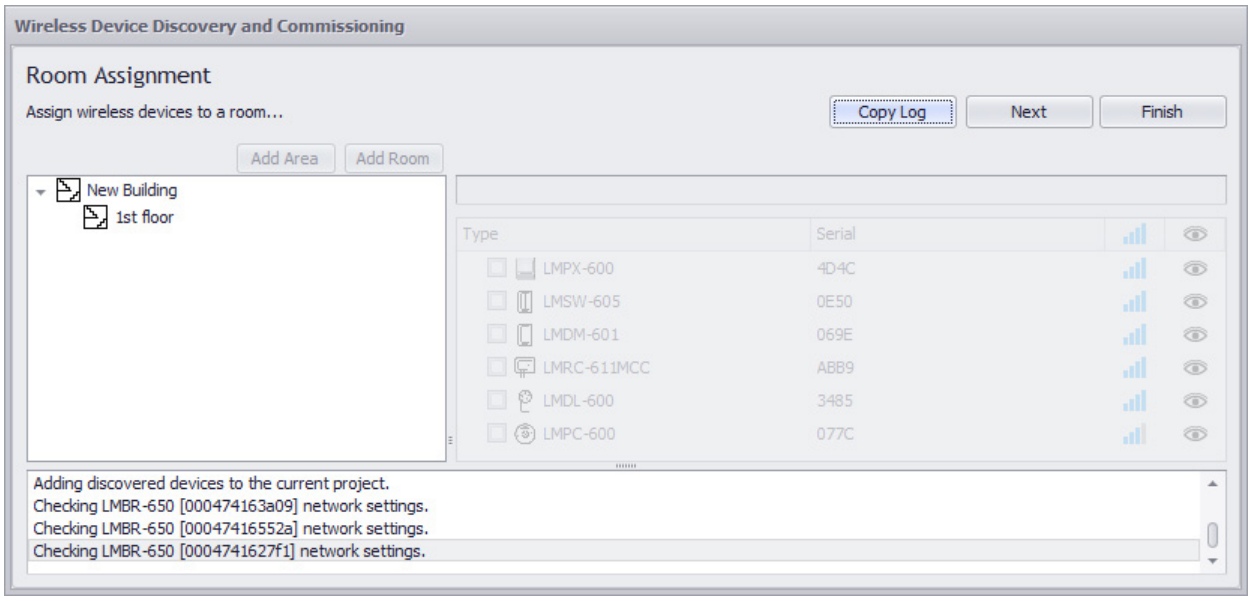
13. The **LMBR Selection** dialog opens. Make sure the **Discover commissioned devices** checkbox is selected, then click **Next**.



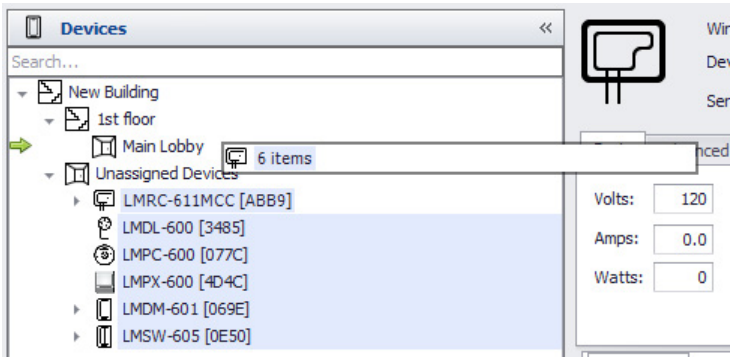
14. The **Discovering Commissioned Devices** dialog opens. The window will populate with all devices in the room. If any switch or sensor devices are not awake, you must wake them by pressing the Config button before they will appear in the list. Once all devices have been found, click **Next**.



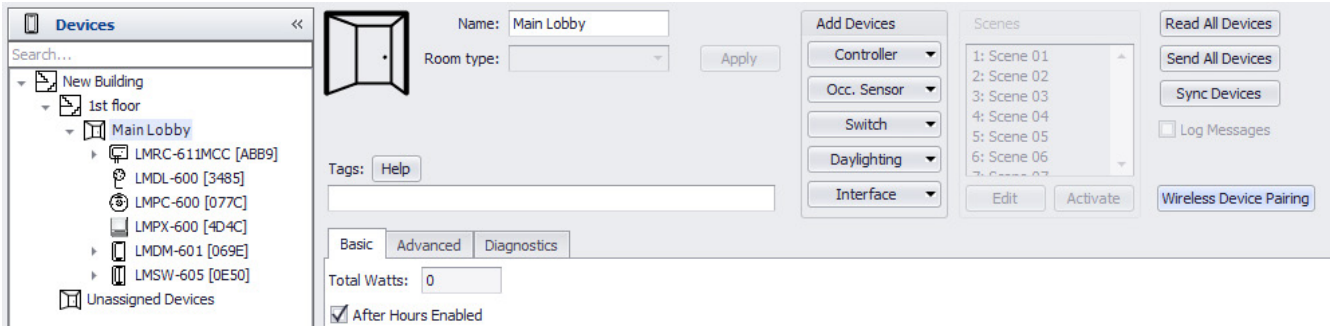
15. The **Room Assignment** dialog appears. Click **Finish**.



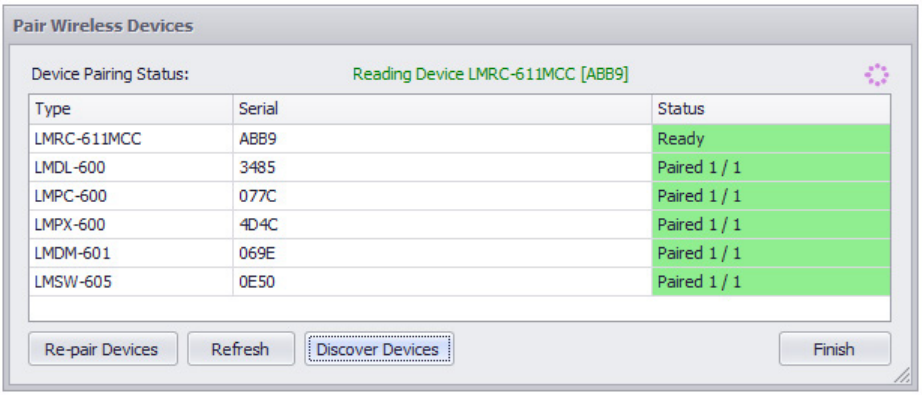
16. The dialog will close and all of the devices will be assigned to the Unassigned Devices category in the tree. Go to the Devices area. Then select all the devices under Unassigned devices drag them into the room that they were originally placed in.



17. The final step in this process is to reconnect wireless scenes and schedules to the LMBR and devices. For **each** room in the tree, highlight the room and click **Wireless Device Pairing**.



18. The **Pair Devices** dialog opens. Click **Discover Devices**.



19. LMCS reads in all the pairing and binding info. Once complete, click **Finish**. Then click **Send All Devices** to send the wireless scene information back to the devices. You must repeat the last three steps for each room in the project.

    NOTE: Instead of clicking **Send All Devices** seperately for each room, you may instead highlighth the Building in the tree and click the same button from there to send to all devices in all rooms.

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