

Appendix 9

Insteon

This appendix describes the features in HCA in support of the Insteon technology and Insteon products available from SmartHome. These topics are covered:

- What is Insteon?
- Insteon devices
 - Adding an Insteon device
 - Modifying an Insteon device
- Insteon PowerLinc interface
 - PowerLinc address database
 - PowerLinc Interface models and Insteon firmware
- Insteon Tools
 - Network Multi-Add
 - The Insteon linking model
 - PowerLinc swap
 - Network Capture
 - Network Map
 - Network Clean
 - Device Replace
 - Changing local level and ramp rate
- Device and keypad linking
 - Device Linking tabs
 - Multi-Way Wizard
- Scene Control without Scenes
- Insteon message triggers for programs
- What HCA knows of the Insteon network and what it doesn't know

What is Insteon?

Insteon is a powerline carrier technology created by SmartHome Design. Like X10 and UPB it allows commands to be sent over the powerline wiring in your home. Signals generated by an Insteon transmitter, for example a keypad, can be received by the computer. HCA can also “listen in on” the communication between Insteon devices and act on that communication, or simply log the activity.

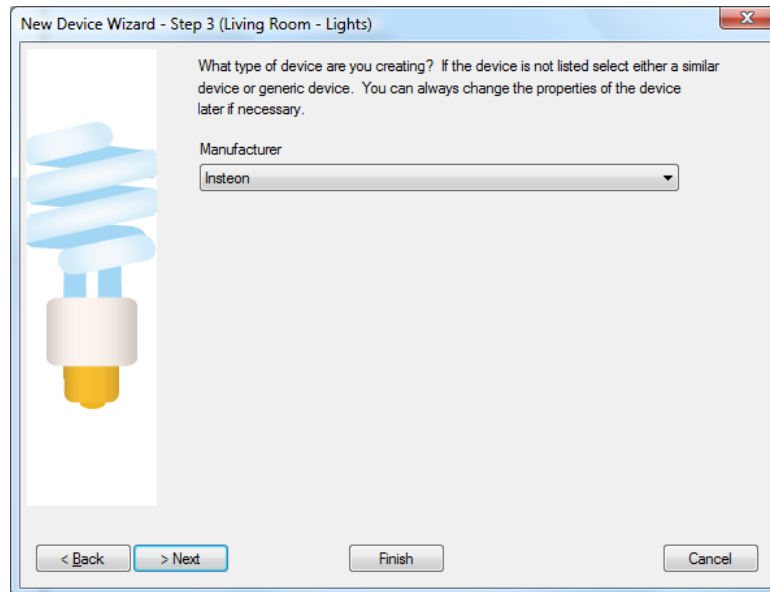
To use HCA with Insteon devices and keypads you need the USB Insteon PowerLinc (model 2413) available from SmartHome. This interface can also be used for X10 communication as well.

Insteon devices

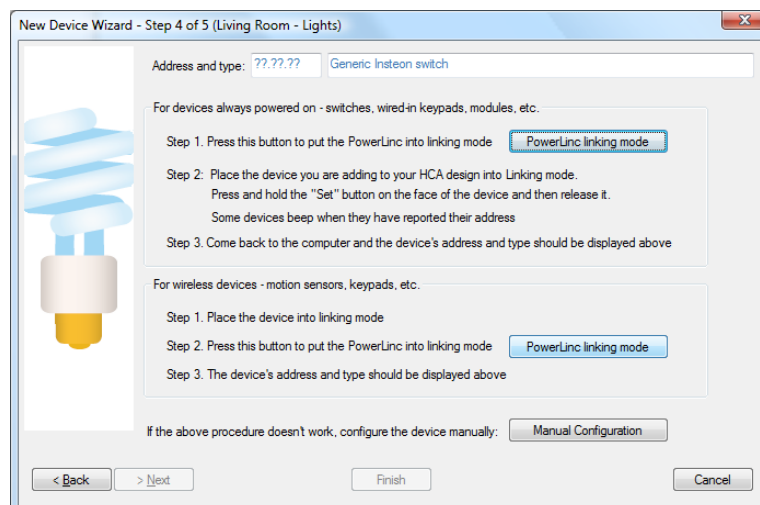
Insteon devices come from the factory with an address permanently already assigned. This address is a three part number and is on a sticker someplace on the device. When you add an Insteon device to your HCA design that address is captured from the device in a step of the New Device Wizard.

Adding an Insteon Device

In step 3 of the New Device Wizard you choose the type of Insteon device. Select as the manufacturer "Insteon".



In the wizard step 4 the Insteon address of the new device is determined. There are two ways to do this.



The best method is to have HCA capture the address from the device when it is placed into linking mode.

As the text in the dialog says, if the device is wired-in, press the top "PowerLinc linking mode" button and the PowerLinc is placed in linking mode – the more recent versions of the PowerLinc beep when you do this. Next, go to the device and press and hold its "set" button until the link is made. Again, some more recent device types beep when you do this. When the link is complete the address and type of the device displays in the dialog.

For devices that are wireless, place the device in linking mode first – press and hold there "set" button" and when it is in linking mode then return to HCA and press the second "PowerLinc Linking mode" button. The link is made and the device address and type displayed in the dialog.

The second method is to enter the device address and type manually. **You should only do this as a last resort as the address capture method builds an important link in the device that is needed for HCA to control it.**

Insteon Device Manual Configuration: Living Room - Lights

What is the Insteon address of this device?

Address: . .

Note: Put wireless devices into linking mode to turn on their receiver before pressing the Test button

What is the type of this device?

Kind

Model number and description

The Test button in this dialog verifies the address you entered. If it can't communicate with the device then this popup gives you options.

Insteon Device Add

The device at that address didn't respond to an Insteon version request.

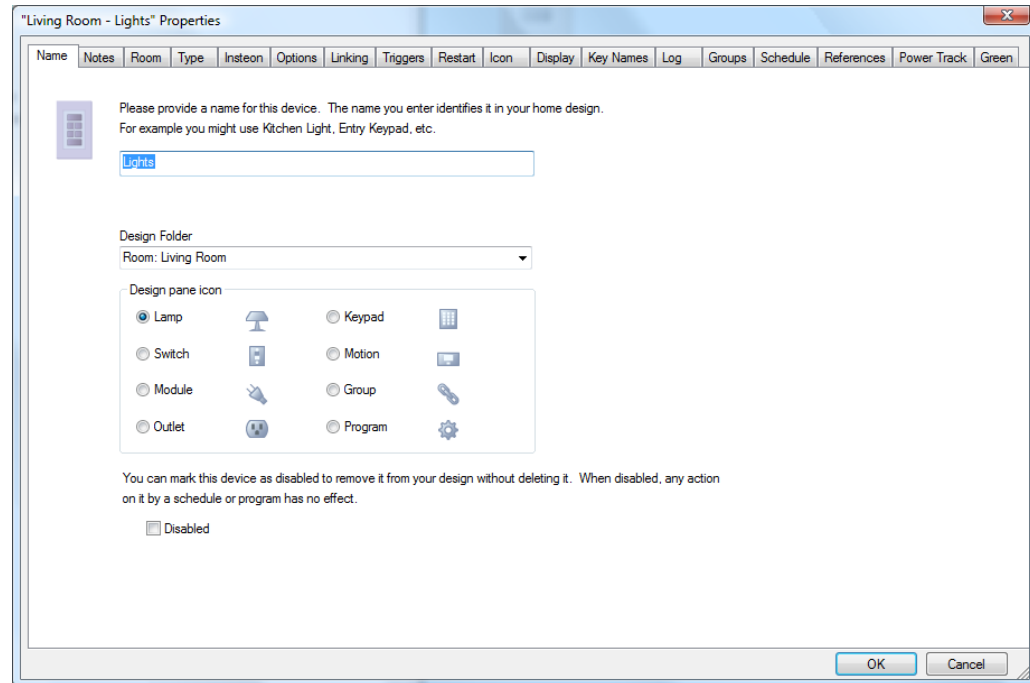
This could be because there is no device at the address you entered or the device is of a newer firmware version that will not respond until it is linked to the PowerLinc.

You have these options:

If you are sure the address entered was correct, then accept it and continue the wizard. If you think this is a device containing the newest firmware, try using the *Attempt to link* button.

Modifying an Insteon Device

Like other device types, to modify the properties of a previously created Insteon device, select its icon or its name in the design pane, right-click and select Properties.



One very nice feature of Insteon devices is that they all work just about the same. All Insteon devices respond to the same commands in the same manner. As such, unlike some other device types there is no place in HCA to set any options that describe a device's function – the options tab only gives you options on how the icon operates.

One final word on Insteon devices: Make sure the address captured by the New Device Wizard or in the device Property dialog matches the address on the device. Pay particular care that you enter it correctly or HCA will not be able to communicate with the device.

If you factory reset the device you must recapture its address. There is a button for this on the "Insteon" tab.

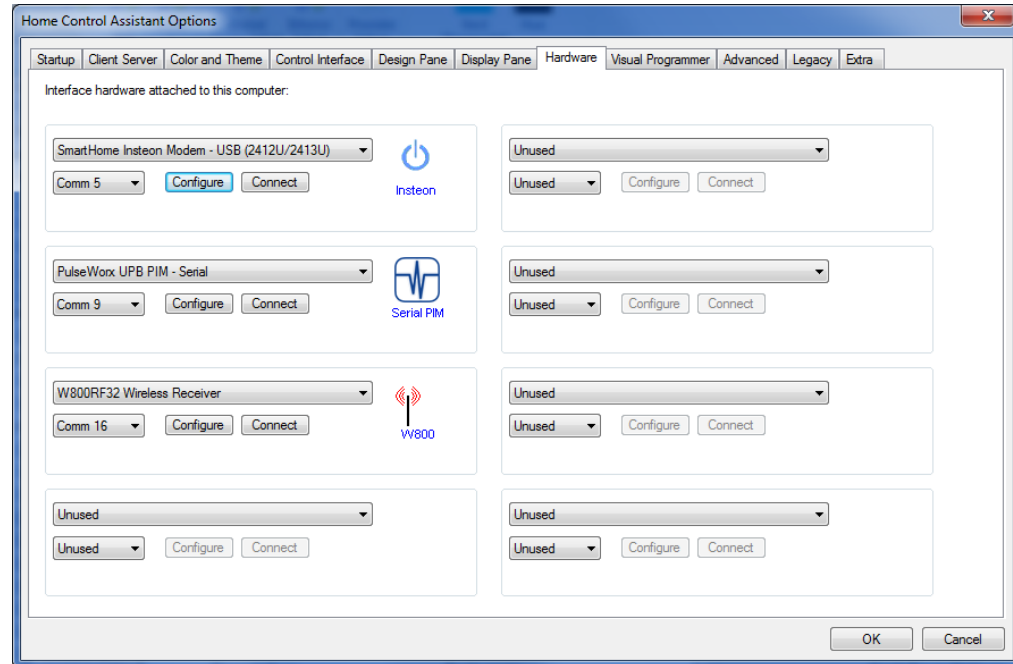
Address

29 . 4C . 2A

Recapture Address

Insteon PowerLinc Interface

Before HCA can send and receive Insteon commands over the powerline, you must connect an Insteon PowerLinc to the computer HCA is running on. Open the *HCA Options* dialog then choose the *Hardware* tab. When you do that this dialog appears:

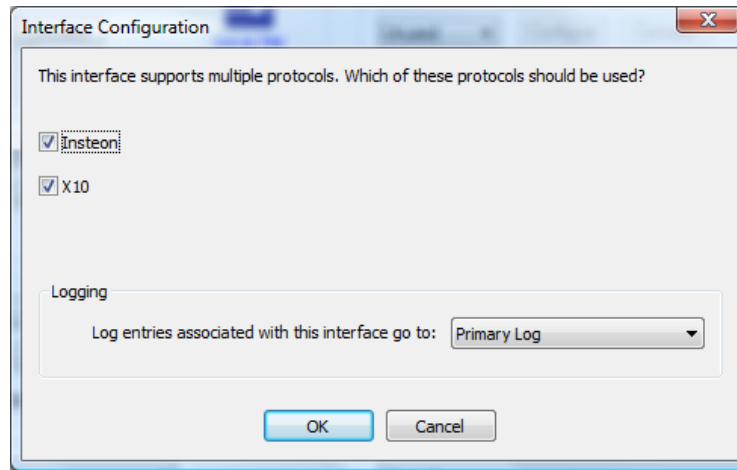


HCA Supports both the current Insteon PowerLinc (2413). HCA also supports the older model PowerLinc (2412 and 2414) but these are not recommended. The 2414 can't send and receive the commands needed by the most current Insteon devices. This is described in greater detail in a later section in this appendix.

Hint: There are many different PowerLinc controllers, make sure you select the correct one!

In the same way you identify all automation interfaces to HCA, all you need do is to select the interface type, communications port, and then press the Test button. If HCA can read information from the PowerLinc it displays a success message. Any problems with connection are noted in a failure message.

As you can see in this dialog, you can attach up to eight automation interfaces to HCA simultaneously. This means that you can use other interfaces as well for UPB and Wireless. One feature of the Insteon PowerLinc is that it can be used for X10 devices as well. To enable this press the Configure button to choose one or both of the supported protocols.



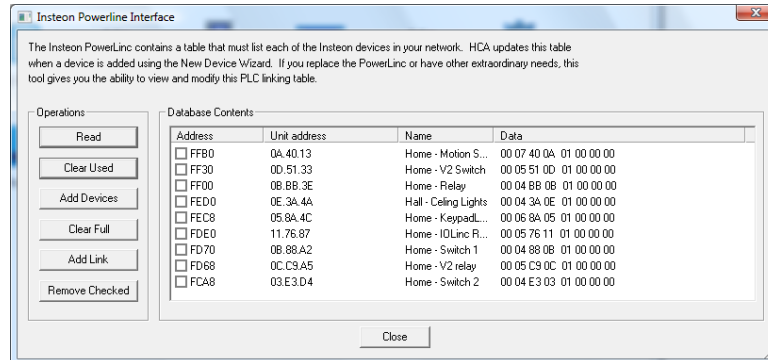
On this dialog you can also choose the log used for this interface.

PowerLine Address Database

Unlike other power line technologies, the Insteon PowerLine will only pass on messages from devices it knows about. This can help prevent you from receiving messages from other users near your home. But it may mean an extra step for you.

As devices are added to your HCA design they are automatically added to the database in the PowerLine, so normally you need not be concerned about this. The problem arises if the PowerLine is reset or you get a new PowerLine to replace a failing unit, or you move your design to another computer with a different PowerLine.

HCA can rebuild the PowerLine table. Click on the *PowerLine* button in the ribbon *Interfaces* category and select from the menu *PLC Utilities*. This dialog appears:



The operations are:

- **Read:** Read and display the PowerLine database
- **Clear Used:** Clear any entries that are marked as used. Can only be done after a read.
- **Clear Full:** Clear all entries in the PowerLine database. This can take several minutes.
- **Add Devices:** Add to the table the addresses of all of your Insteon devices. Use this operation if you replace the PowerLine with a new one.

PowerLinc Interface models and Insteon firmware

HCA supports all models of the PowerLinc interface but not all have the same capabilities. Also, not all Insteon devices have the same level of firmware in them. You may be working with a PowerLinc model and device firmware that can present challenges.

Some Insteon firmware has a requirement that the device's linking table include a responder link for HCA (actually the PowerLinc address but you know that) to have HCA even turn the device on or request its status.

During the New Device Wizard, when you get to the Insteon Address step there are two options as described above. The address capture method is key as it also builds the needed responder link in the device that the new firmware needs.

But there are problems. Here is what works and what doesn't and why

- Version 1 firmware is the newest Insteon devices.
- Version 2 is newer firmware
- Version 3 is the most recent – at the time of HCA 11 release – firmware.
- This firmware has the requirement as described above.

If you are using a 2413 PowerLinc, here are the operations that work with each device firmware version.

	Capture	Test
V1	ok	ok
V2	ok	ok
V3	ok	ok

If you are using a 2414 PowerLinc, here are the operations that work with each device firmware version.

	Capture	Test
V1	no	ok
V2	no	ok
V3	no	no

This means that if you were working with a device with version 3 firmware, and you are using the 2414 model PowerLinc you will have to manually link each device to the powerline or HCA can't even turn it on.

Insteon Tools

This section describes a number of tools that work with Insteon devices. All of these tools are started from buttons in the *Insteon* section of the ribbon *Protocols* category.

Multi-Add

One method to quickly add a number of already installed Insteon devices is to use Insteon Multi-Add. This dialog appears as:

The Insteon Multi-Add tool lets you add a number of already installed Insteon devices to your design.

Step 1: First press the "Start" button and then go to the first Insteon device you want to add and place it in linking mode. As soon as the device enters linking mode, the address of the device is captured. Then move to the next device and repeat the process. You can add up to 32 devices during this step. Not all wireless devices work with this tool.

You should take notes on the order of the devices you went to so when you return to the computer you can name them and assign to rooms or folders.

	Address	Model - Product	Version	Room Name	Device Name	Ignore
1						<input type="checkbox"/>
2						<input type="checkbox"/>
3						<input type="checkbox"/>
4						<input type="checkbox"/>

Start Get Types

Step 2: Press the Get Types button to query each device for its version and type

Step 3: Replace the default device and room names with more descriptive ones. Select the type for any device listed as Unknown. If there was a problem with the discovery process - always a possibility - you can check the ignore box and an HCA device is not created for it.

Step 4: Press OK to create the HCA devices. Once created you may want to open their properties and change the icon and other HCA settings.

OK Cancel

Here is how this works: Press the start button and then walk around your home putting devices into linking mode. Keep track of the location of the devices and the order you do them in!

Once the Start button is pressed the dialog tells you to begin.

The Insteon Multi-Add tool lets you add a number of already installed Insteon devices to your design.

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	Address	Model - Product	Version	Room Name	Device Name	Ignore
1						<input type="checkbox"/>
2						<input type="checkbox"/>
3						<input type="checkbox"/>
4						<input type="checkbox"/>

Stop Get Types

Waiting for Linking report... Press Stop when you have added all your devices

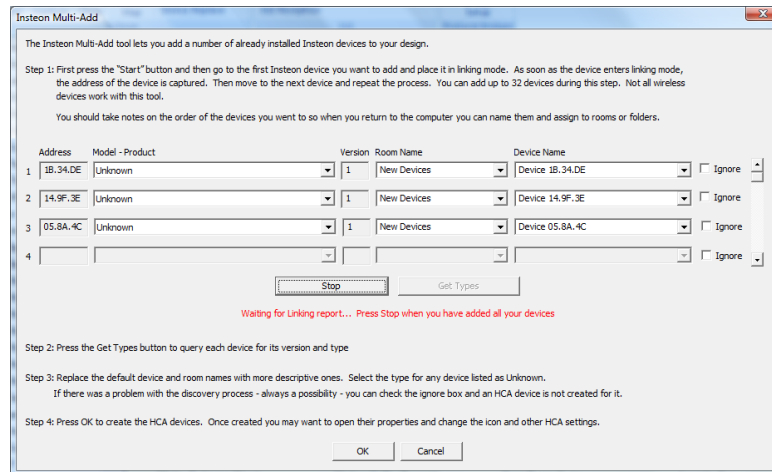
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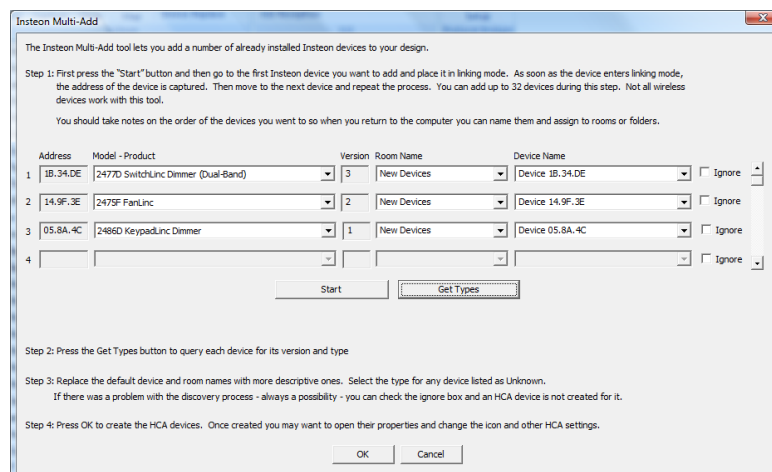
Step 4: Press OK to create the HCA devices. Once created you may want to open their properties and change the icon and other HCA settings.

OK Cancel

Here is the dialog after three devices have been added. Each added device appears on its own row. That section of the dialog scrolls and you can add up to 32 devices at once although, as said below, you shouldn't try to do that many unless you are very fast and have a good memory.



When you have completed all your additions, press the *Stop* button and then press the *Get Types* button to start the next step of multi-add. HCA requests the status of each device and from that determines its type.



To complete the add operation, enter a device name and room name for each device and the close the dialog with OK.

A few notes on using Multi-Add

- You have only a limited time to complete the process before the PowerLinc exits linking mode. It is best to do only a few devices at one time.
- If you find that you have added a device more than once or made some other error, just "tick" the ignore box next to the device to it and it isn't added to your design.

The Insteon linking model

Described in the next sections are a number of tools in HCA to help manage your Insteon Network. These tools are for reading, writing, modifying, and displaying links between devices, so a short tutorial on Insteon links may be helpful.

If you are familiar with how keypads work in the X10 world, you may find Insteon keypads much more capable but more complex to work with. Each button push on an Insteon keypad sends an Insteon message. The destination of that message depends upon what was linked to that button.

Links can be created by a manual method. When you press and hold the keypad button until it goes into linking mode, the keypad sends out a message that says "My address is this and who would like to join my group 'n'?" Where 'n' is the button number.

At the lamp module you want to respond to that keypad button you press and hold its set button for a few seconds. That action sends a message to the keypad saying "Yes, I want to join your group n". The keypad then sends back a message saying "OK you're in" and then the lamp module acknowledges that message. Now linking is complete.

What happened is that the memory of the keypad and the lamp module were updated. The keypad added an entry to its internal memory that says "Group n has as one of its members the device addressed as xx.xx.xx". The lamp module updated its memory to say "If I receive an ON message from yy.yy.yy I should go to the level I was at when I was linked in".

In this example we used a KeypadLinc and a lamp module but the same things apply if you were linking with a SwitchLinc – as either a controller or receiver.

Hint: The preceding paragraphs are a bit simplified but it is correct enough for this discussion. See the SmartHome technical information for the complete story.

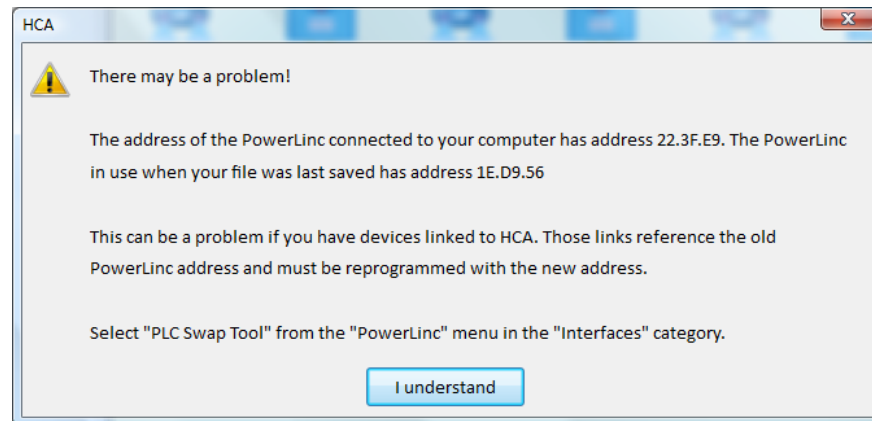
HCA can read and write these linking tables from all your devices.

This is important for two reasons: HCA can then understand all the connections between all your devices and, more importantly, be able to create new ones. This means that using HCA you need not spend time running around *pressing and holding* and *tapping set buttons*. In most cases, HCA can do it all for you.

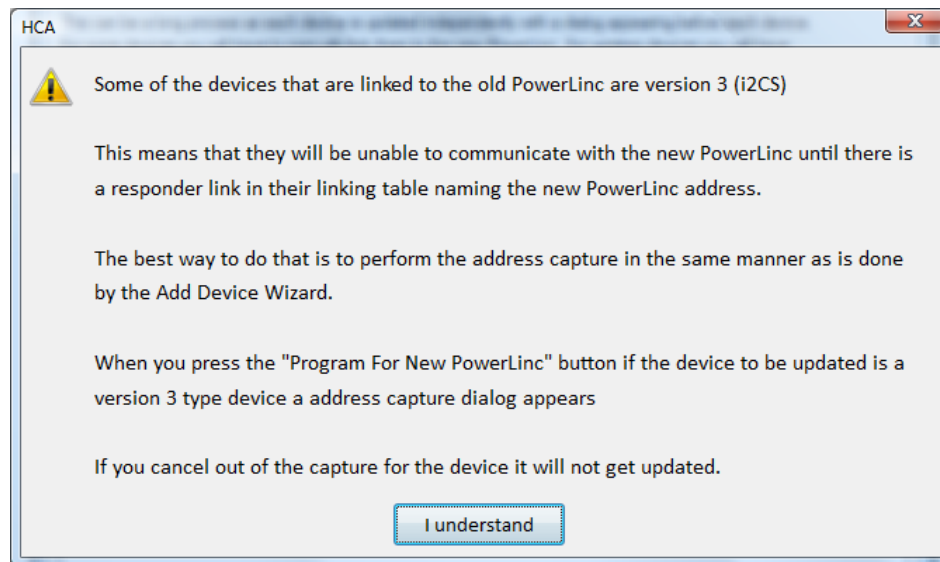
PowerLinc Swap

The Insteon linking model described above presents a major challenge. Since each device that is linked to HCA is really linked to the PowerLinc used by HCA, if you change that PowerLinc all the links in all your devices that reference the old PowerLinc address will stop functioning. HCA tries to detect when the PowerLinc has changed and provides a tool to reprogram all your devices with the new PowerLinc address.

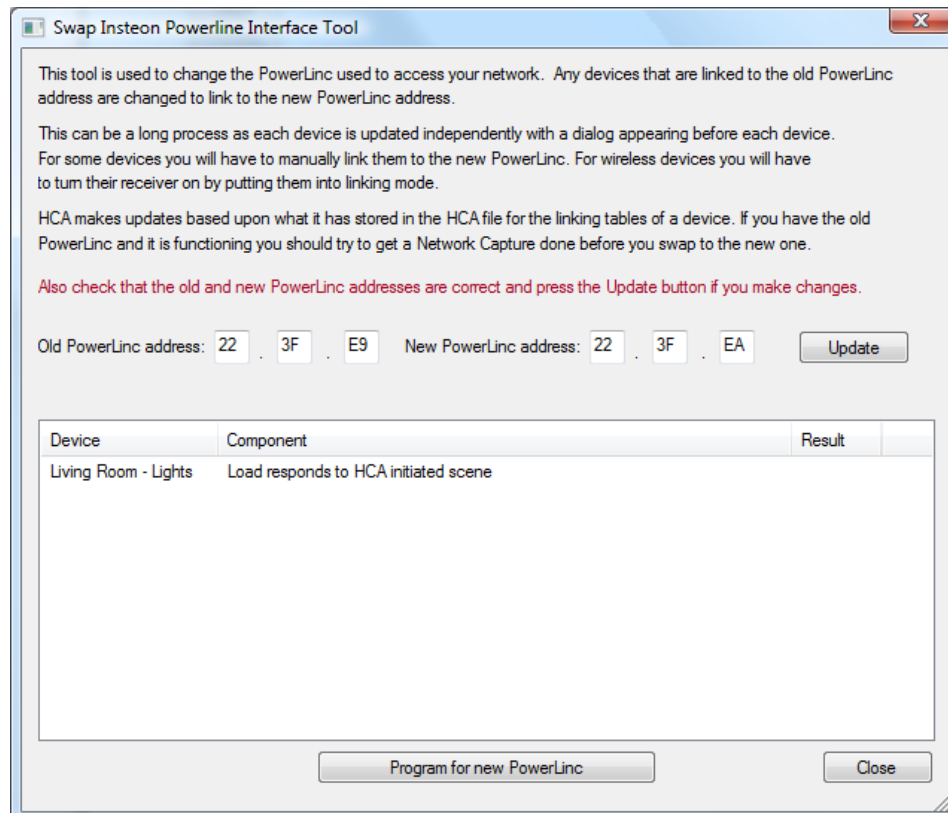
When HCA detects a PowerLinc change, this dialog appears when you load your design file.



And it is even a bit worse than that. In the section above that explains that a "responder link" is needed in most devices before HCA can control it, the existing responder link is to the old PowerLinc and this needs to be updated. The only method to do this is to recapture the address of all devices.



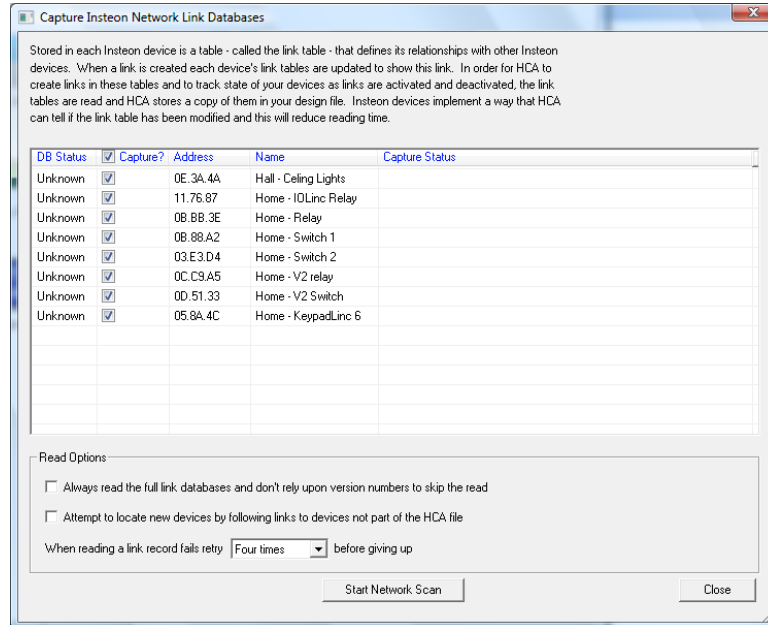
The Swap tool shows what needs to be programmed.



Carefully enter the old and new PowerLine address and then start the operation. Changing the PowerLine is not a simple operation. This isn't HCA's fault but just an outcome of the way that Insteon works.

Network Capture

The Network Capture tool reads the linking databases out of each Insteon device. The Network Capture tool is started by pressing the *Network Capture* button in the ribbon *Protocols* category. This dialog appears:



This is the most important tool of all! All the other Insteon Tools – Network Map, Network Clean, Device Replace, and the Visual Scene Editor – rely upon having complete and correct knowledge of all devices' linking databases.

When HCA reads the database of each device and copies its contents to the HCA design file, it also reads the version number of the database. The version number is updated as links are added, deleted, or modified. This lets HCA skip the reading of a device if it can determine if the database already matches what it has in the design file.

The database version for scene-capable Insteon a device is stored in its memory and gets reset to zero on factory reset or power cycle. If you have a power outage, all of your devices will get reset to version zero.

HCA has to assume that any device with Database version zero has been reset or modified and forces a database re-read before programming it again. Upon first reading a device database with a zero version number, HCA writes to it in order to change the version to one so that it does not have to re-read it again. You may notice that all devices have a database version of one after the first network scan after a power outage.

Programming a device changes the database version number. The final version number is determined by the number of bytes written to it (not links, but bytes). The actual number of bytes written varies depending on what changes are being made to the links. HCA only writes the bytes necessary, which saves a lot of time.

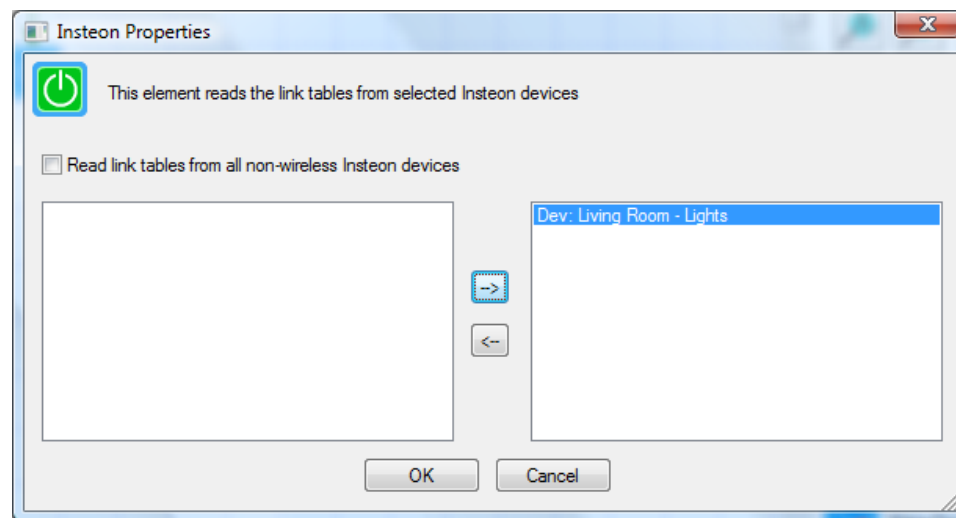
Occasionally the database number increments back to zero (roll-over), in which case HCA forces a re-read prior to programming the device again.

Reading out the database may take some time. If you have lots of devices you may want to choose only some of them to read. To do this, use the checkboxes in front of each device's name.

The same Remote Memory Access popup dialog used by all the other Insteon tools appears when you press the Start Network Scan button.

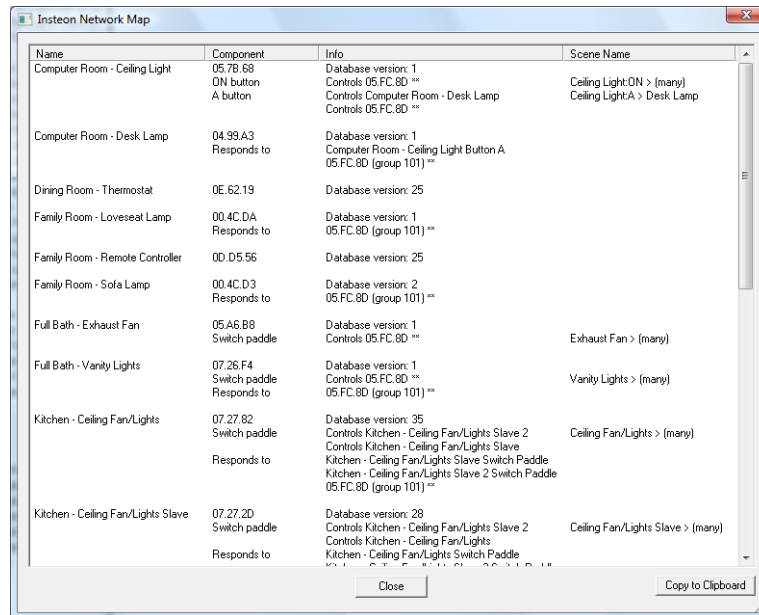
Hint: In some large networks the number of message repeats can be very large. This can really slow down the reading of linking databases. On the HCA Properties dialog Advanced tab is an option that sets a time limit on how long HCA will work at reading an entry from the linking database before giving up,. You may need to increase this timeout if you find that the Network read is reporting timeouts too frequently.

There is a visual programmer element that initiates the reading of a device linking table. You can use this in a program that you schedule to run infrequently – once a week or once a month – to make sure that the linking tables are up to date. It is not recommended that you don't do this too frequently as it takes a lot of network access time and the messages sent to read the devices can collide with other uses – like turning things on and off.



Network Map

The network map is a textual representation of your Insteon network. Displayed are what each device controls and what it responds to. To open the network map, press the *Network Map* button in the ribbon *Protocols* category



Name	Component	Info	Scene Name
Computer Room - Ceiling Light	05.78.B8 ON button A button	Database version: 1 Controls 05.FC.8D ** Controls Computer Room - Desk Lamp Controls 05.FC.8D **	Ceiling Light:ON > (many) Ceiling Light:A > Desk Lamp
Computer Room - Desk Lamp	04.99.A3 Responds to	Database version: 1 Computer Room - Ceiling Light Button A 05.FC.8D (group 101) **	
Dining Room - Thermostat	0E.62.19	Database version: 25	
Family Room - Loveseat Lamp	00.4C.DA Responds to	Database version: 1 05.FC.8D (group 101) **	
Family Room - Remote Controller	0D.D5.56	Database version: 25	
Family Room - Sofa Lamp	00.4C.D3 Responds to	Database version: 2 05.FC.8D (group 101) **	
Full Bath - Exhaust Fan	05.A6.B8 Switch paddle	Database version: 1 Controls 05.FC.8D **	Exhaust Fan > (many)
Full Bath - Vanity Lights	07.26.F4 Switch paddle Responds to	Database version: 1 Controls 05.FC.8D ** 05.FC.8D (group 101) **	Vanity Lights > (many)
Kitchen - Ceiling Fan/Lights	07.27.82 Switch paddle Responds to	Database version: 35 Controls Kitchen - Ceiling Fan/Lights Slave 2 Controls Kitchen - Ceiling Fan/Lights Slave Kitchen - Ceiling Fan/Lights Slave Switch Paddle Kitchen - Ceiling Fan/Lights Slave 2 Switch Paddle 05.FC.8D (group 101) **	Ceiling Fan/Lights > (many)
Kitchen - Ceiling Fan/Lights Slave	07.27.2D Switch paddle Responds to	Database version: 28 Controls Kitchen - Ceiling Fan/Lights Slave 2 Controls Kitchen - Ceiling Fan/Lights Kitchen - Ceiling Fan/Lights Switch Paddle	Ceiling Fan/Lights Slave > (many)

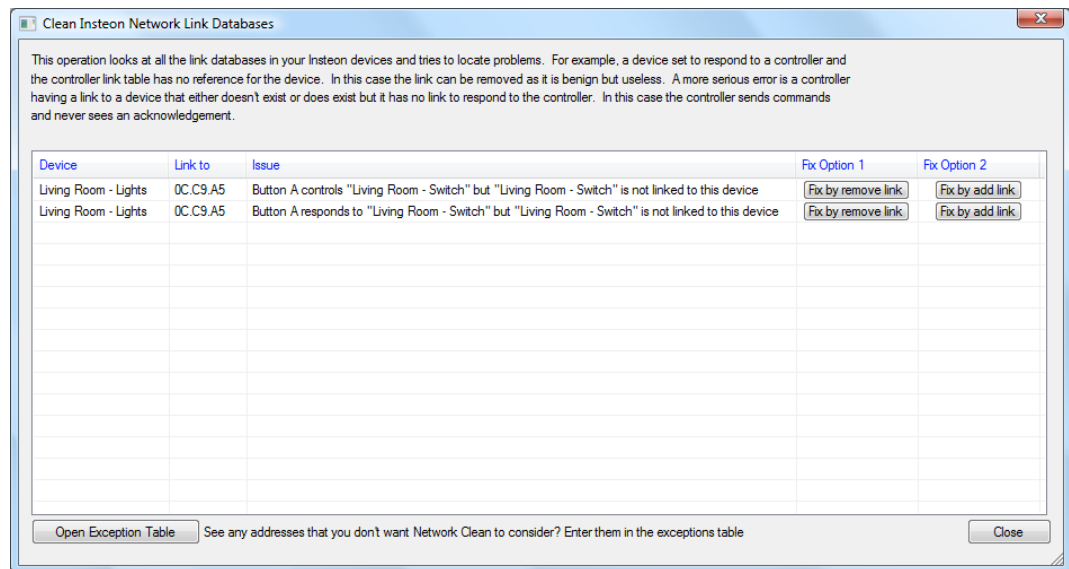
This is a great method to document your network – a very handy thing in case something breaks and you need to re-establish some links. You can get a printout of this in one of two ways. The standard HCA printing features (*Application menu – Print - Printout Setup*) can print the network map. Or if you want to format it differently or use your own tools, you can save the map in CSV form using the Copy to Clipboard function. You can then paste it into other applications – perhaps an Excel worksheet..

Network Clean

It is easy for there to be problems with links in an Insteon network. If a device gets reset or you re-link a switch or keypad button and don't first remove the existing link you may wind up with problems.

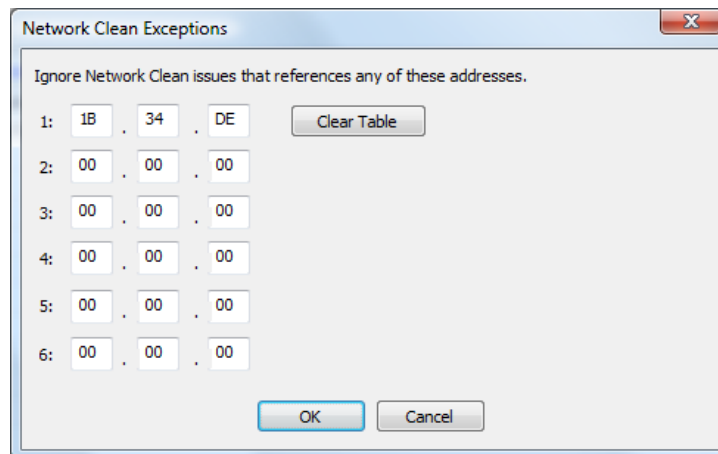
For two devices to be correctly linked there must be a controller link in one and a responder link in the other. If one of the two is missing then the controller can't control the responder.

The Network Clean dialog analyzes your network and looks for problems. To perform this, press the *Network Clean* button in the ribbon *Protocols* category.



The Cleaning process corrects problems either by removing or adding links. For each error listed press the button for the kind of correction that you want to perform.

There may be some devices that, for whatever reason, you don't want the network clean tool to work with. These can be listed in the exception table. This has the effect of removing them from all consideration by the Clean tool.



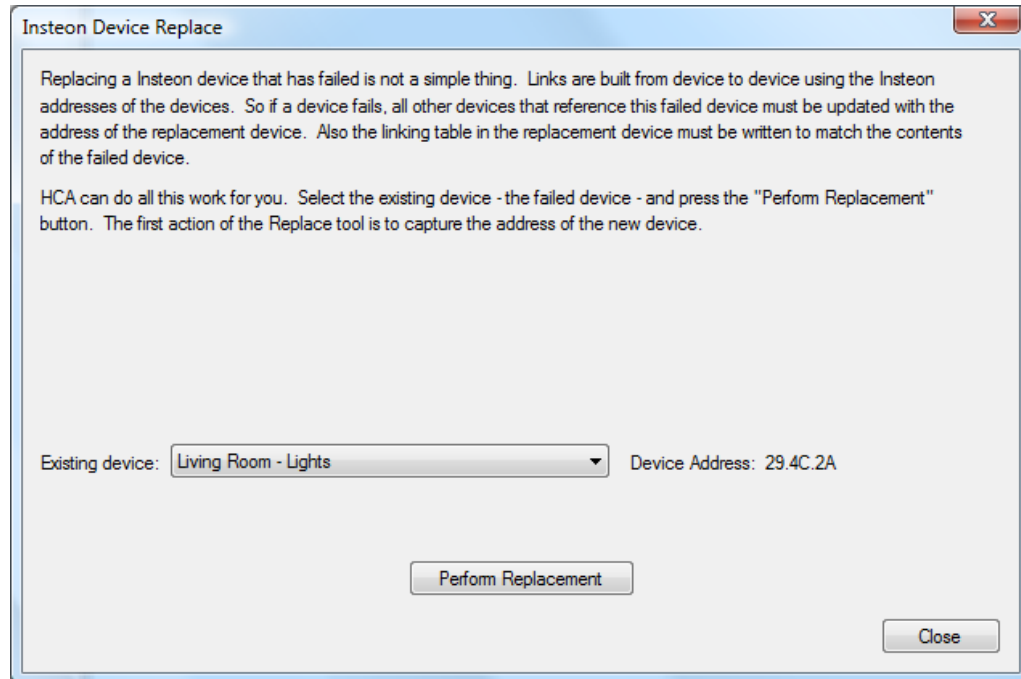
BIG Note: Don't get too carried away with the network clean tool. While the rules of device linking say one thing there are exceptions. Insteon is not a perfectly consistent system. There are device types that seem to break these rules. Think before you act and, as has been said many times; if it isn't broken don't fix it.

Hint: For the Network Clean tool to be able to detect and correct problems it needs to have the most current linking databases to analyze. Make sure that you use the Network Capture tool often.

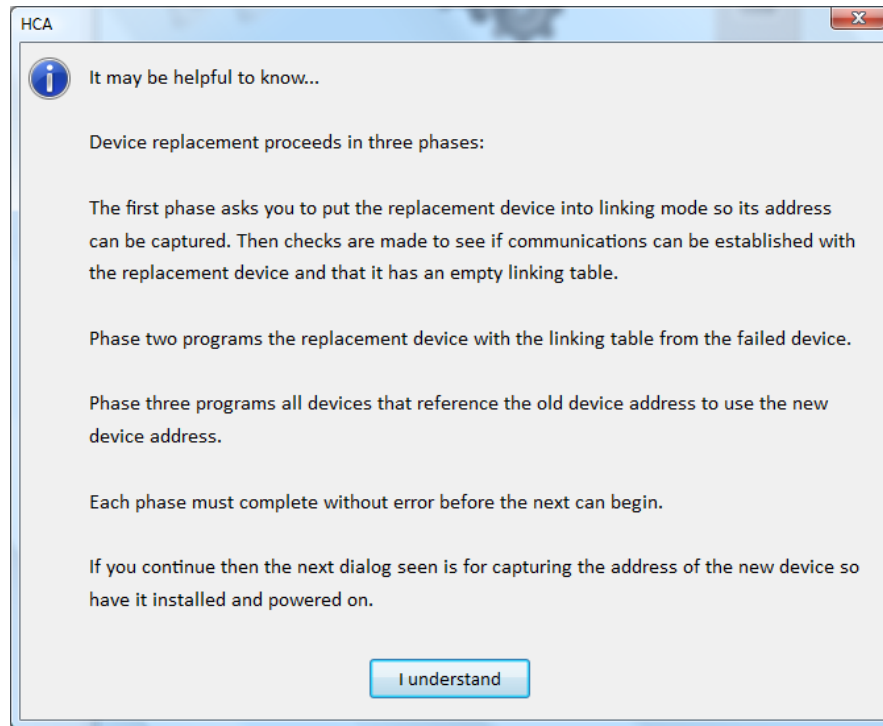
Device Replace

A major problem in the Insteon linking model is what happens if a device fails. Not only do you have to replace the device but you have to reprogram it with all the stored links in it. And, as important, you have to reprogram any device that is linked to the failed device since those devices reference the old device's address. **This can be a long and complex operation.**

HCA can help with this. Press the *Device Replace* button in the ribbon *Protocols* category.



Starting the operation is simple: All you need do is to select the failed device – its Insteon address shows next to it - and press the Perform Replacement button. The procedure is explained:



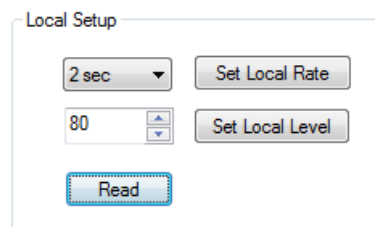
Once the popup is closed then the operation proceeds as described. Each phase requires action on your part and subsequent popups show that.

Hint: For the Device Replace tool to be able to correctly program the replacement device it needs to have the most current linking databases to analyze. Make sure that you use the Network Capture tool to keep HCA up to date. But you know that already!

Changing Local ramp rate and Local Level

For some device types – switches and load controlling keypads– you can set the level and rate the load goes to when locally controlled. For switches when the paddle top is tapped, to what level and at what rate does it turn on? And for the paddle bottom, at what rate does it go off?

This is set from the Insteon tab of the device properties in the "Local Settings" box.



You can read the settings from the device, modify them, and then store the changes to the device.

Note: This is an area where Insteon is not consistent and not all device types support this nor do all device types – and firmware versions – operate the same. So if it works for your device then great. If not, you can always set these options manually – see the device documentation from SmartHome.

Device and Keypad Linking

In the preceding section the subject of linking and linking databases has been covered in detail. But most of that description focused on reading and storing those tables into HCA. The section discusses the tools HCA has for creating links.

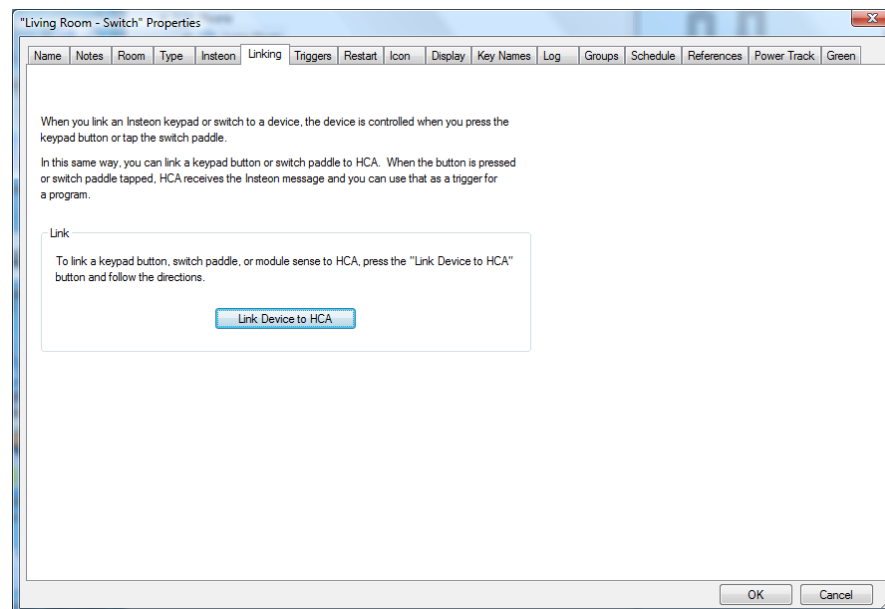
There are three methods:

- The linking tab in device properties. These are good for linking HCA to the device so that HCA can respond to signals from keypads and switches, and control KeypadLinc LEDs.
- The Visual Scene Editor. This visual tool is for creating links between devices that can be activated by HCA or by an Insteon device. This is covered in the VSE chapter of the User Guide.
- The Multi-Way wizard. This is a tool for creating multi-way associations. A multi-way association is a set of devices where if one is controlled (tapping the switch paddle or pressing a KeypadLinc button) all the others in the association are controlled as well.

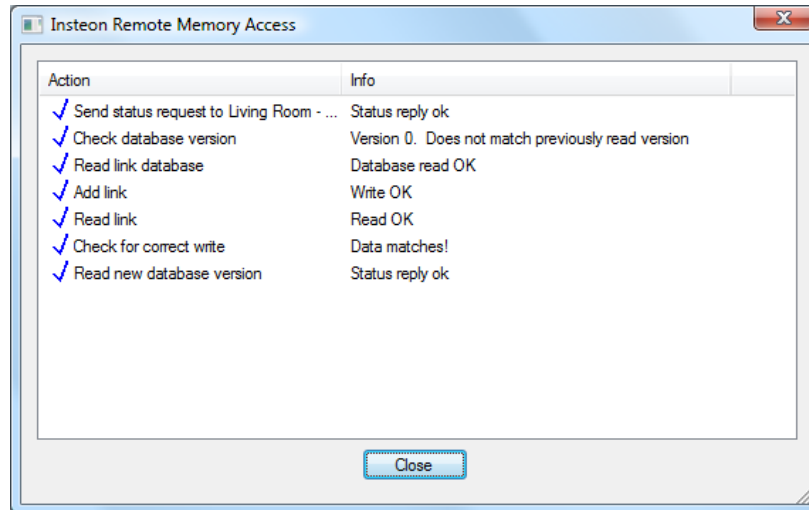
Device Linking Tabs

While the Visual Scene Editor is a general tool that can be used to build links between devices and HCA, you may want to create links with HCA in a simpler manner.

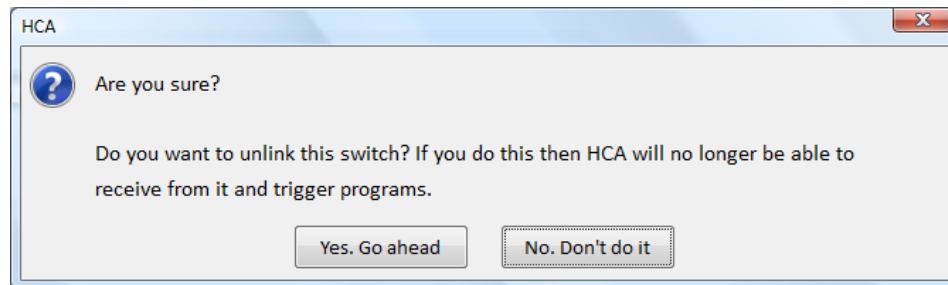
When you open an Insteon device property dialog, the linking tab appears as:



If you press the *Link Device to HCA* button HCA writes the necessary link to the device's linking table so that each time you tap the switch paddle, HCA receives a message. Once linked in this way, you can then create a trigger so that the Switch paddle starts a HCA program.

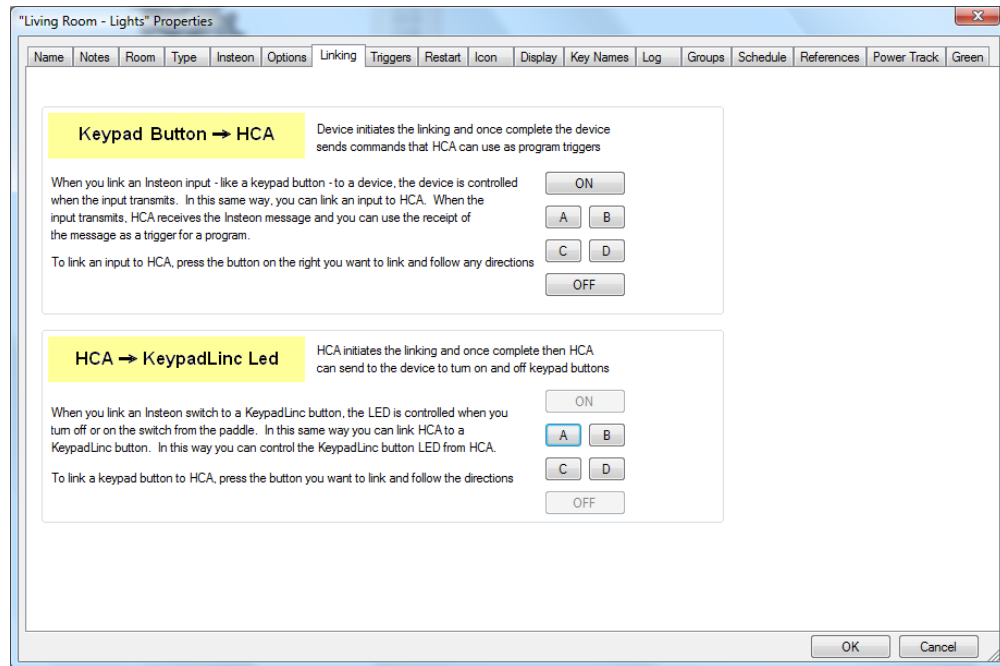


If the device is already linked the button text says *Already Linked to HCA*. If you press that button, this popup appears:



This gives you the ability to unlink an already linked device.

Linking a controller – like a KeypadLinc - is a bit more complex. The linking tab appears as:



This dialog is divided into two sections. The upper section is for linking buttons so that when pressed a message is sent to HCA. Like the switch paddle case, once a button is linked then a HCA program can be triggered by that button press.

The lower section of the dialog is for linking the KeypadLinc LEDs to HCA so HCA can send commands that turn the LEDs on and off. Unless HCA and the KeypadLinc LED are linked, HCA can't control the LED.

To create a link all you need do is to press the button and HCA will program the switch as needed. If the button or LED is already linked to HCA the txt on the button is HCA. Pressing it will offer you a chance to unlink the button or LED and HCA.

Hint: There is no magic here. The linking tab is only a quicker way to do what the Visual Scene Editor could also have done.

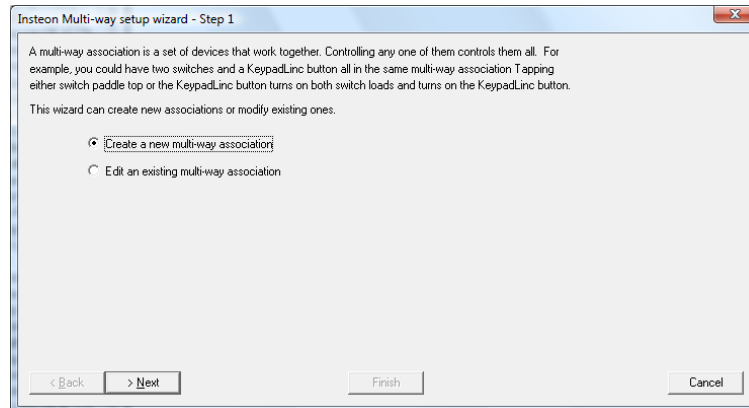
Multi-Way Wizard

A Multi-way association is a collection of two or more devices that all work together. An example is best to illustrate this. Suppose you have a number of lights in your kitchen. There are separate switches but when you tap the paddle of one you want them all to come on. And it doesn't matter which one you tap – controlling any of them causes them all to come on. This collection of switches is a multi-way association. You can also add a KeypadLinc button – for the KeypadLinc load or not - to an association so that if you tap an associated switch, the KeypadLinc button illuminates to show that the association is on.

The key concept of the multi-way wizard is that each member of the multi-way must be able to control all the others and respond to all the others. Since a module, for example, can only receive it can't be part of a multi-way. Only devices that both transmit and receive can join a multi-way.

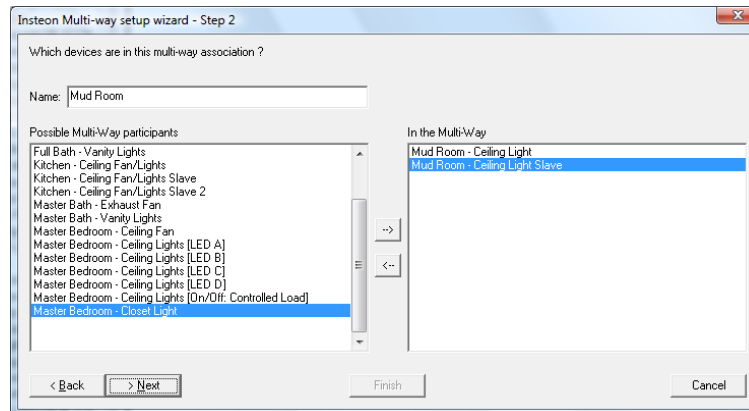
There is no magic in the Multi-Way wizard. All it is doing is creating links in each of the devices in the association. You could create this in the Visual Scene Editor but since the number of links can be large, the multi-way wizard may be more convenient.

To start the wizard, press the *Multi-Way* button in the ribbon *Protocols* category. The first step of the dialog is:

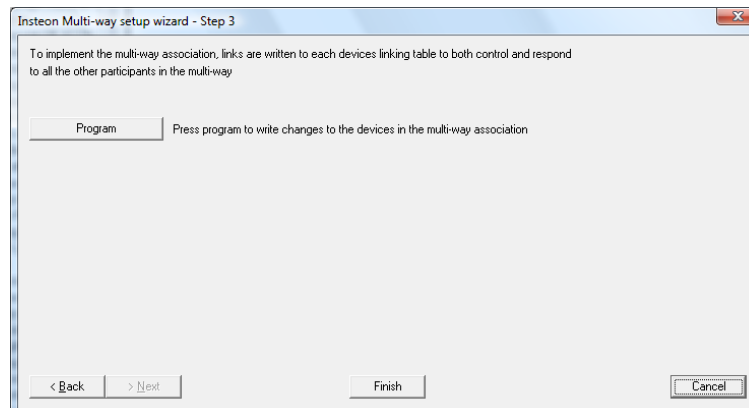


The multi-way wizard doesn't only create multi-way associations, you can also edit an existing association to add or remove members.

The next step in creating a new association is to select the devices you want to associate.

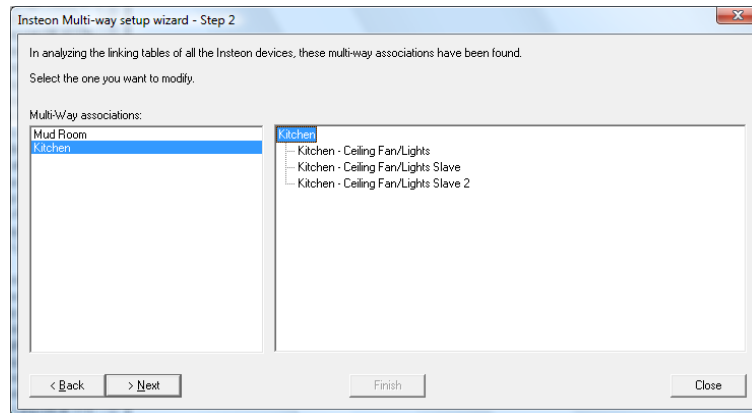


All you need do is to select what devices you want in the association. Use the → and ← buttons to move items between the two lists. When you have made your selections press the Next button.



Press the Program button and HCA will create all the necessary links.

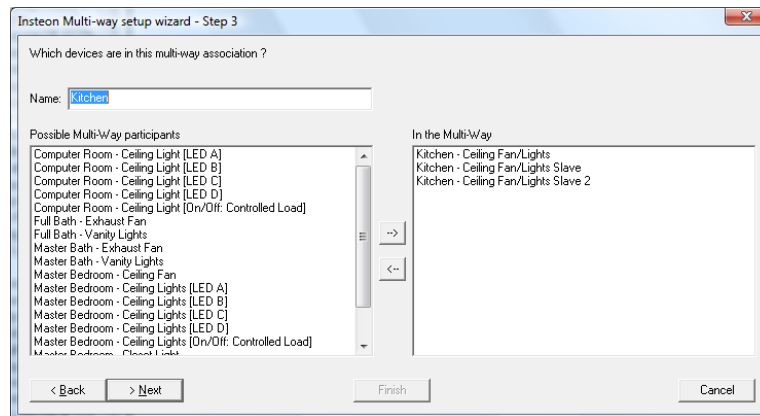
To edit an existing association, the second step of the dialog is:



HCA lists all the multi-way association it finds – by analyzing the linking databases of all your devices – and presents you with a list. When you select a multi-way in the left list, the right display shows what are the devices that make up the association. Select one and press Next.

Hint: If you want to rename the multi-way just click on the name in the right pane and HCA allows you to edit the name.

The next step of the edit is the same as when you are creating a new association:



You can add or remove devices from the association and then press Next. If you have made changes then the Program step appears and you can write those changes to your devices.

Hint: For the multi-way wizard to be able to edit existing associations it needs to have the most current linking databases to analyze. Make sure that you use the Network Capture tool often.

Scene Control without scenes

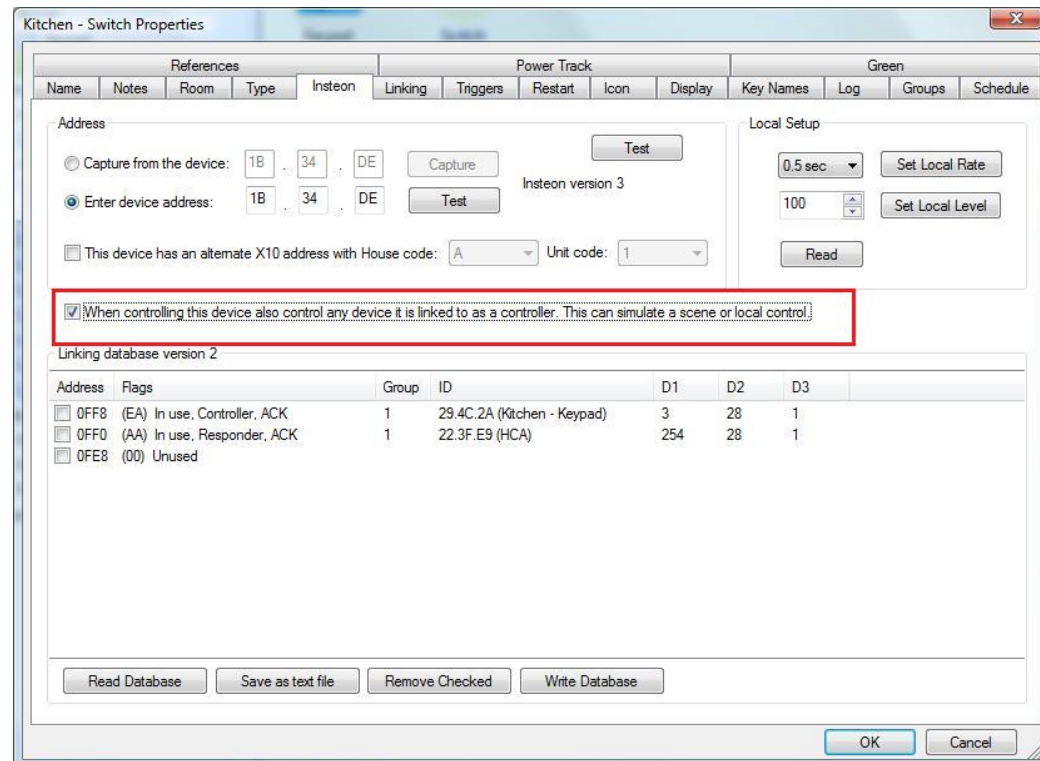
In the User Guide chapter on the Insteon Visual Scene Editor that tool was described along with how scenes can be invoked using the Scene Visual Programmer element and in schedules. There is an additional way to get "scene like" behavior.

One usual problem with Insteon devices because of its linking model is that no controller can pretend to be another controller. An example: Suppose you have a switch that controls a load linked as a controller of a KeypadLinc button LED. You tap on the paddle, the load comes on, and the KeypadLinc button turns on as well.

What happens if you use HCA to turn on the load? The load comes on but the KeypadLinc button does not. This is because HCA can't "pretend" to be the switch and have the KeypadLinc button LED respond.

There are three ways to solve this. One method is to create a scene where HCA was the controller and have the scene include the switch and the button LED. Another method is to create a program that controlled the switch and the button LED. In either case you have to remember to use the scene or program rather than control the switch directly.

The final method is to use an option that can be enabled on Insteon devices:



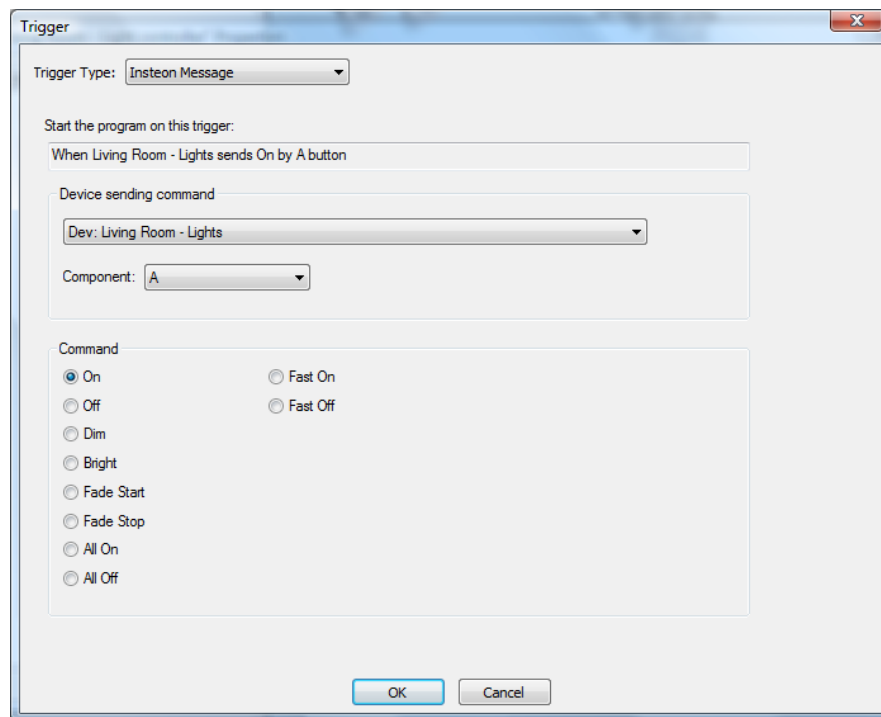
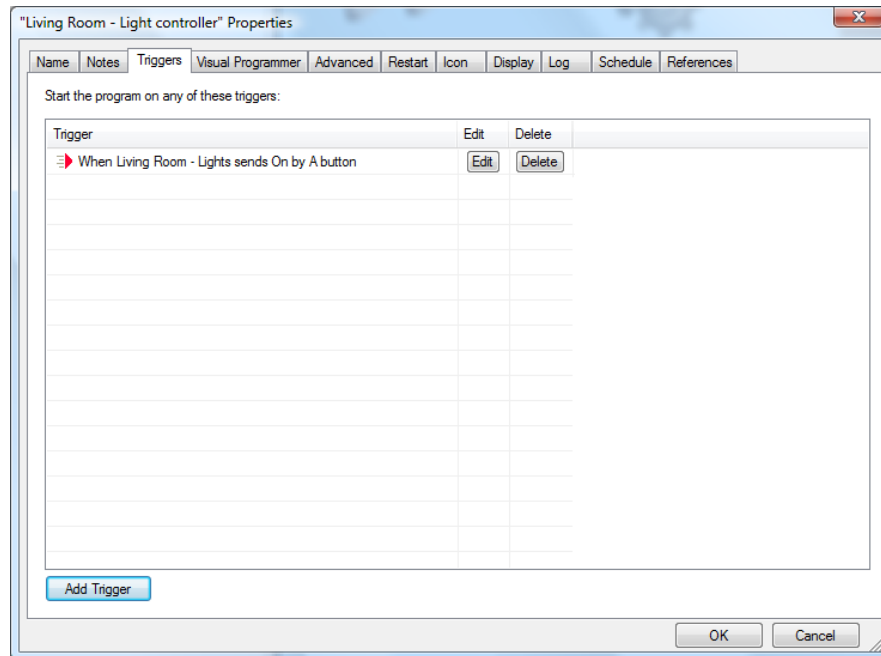
With this option enabled – and if HCA has the current linking table of the device – then when the device is controlled, HCA also controls any device that is linked to the device as a responder.

There is one major difference between what this option does and a "real" scene. With a scene all devices respond at the same time. They also respond using the ramp rate configured in the scene. When this option is enabled, HCA must send individuals commands to each device and the ramp rates are not used. For keeping one device and an associated keypad indicator up to date this is a excellent method.

Program triggers for Insteon messages

Once you have completed linking HCA to respond to a switch paddle tap or keypad button press the next step is to create program triggers that respond to Insteon messages and start programs.

Just like other program triggers, it all starts on the Triggers tab of the program property dialog. To create an Insteon trigger press *Add Trigger* and choose the trigger type *Insteon Message*.



This dialog lets you choose any of the Insteon devices that transmit in your design.

The only other part that needs to be specified is the command to trigger on. You can create a trigger that responds to an On button press and another trigger that responds to an Off button press. Not all devices send all the commands listed so choose carefully.

Hint: Remember that triggers will not work unless the devices are linked to HCA. The trigger dialog presents all possibilities for triggers not just those linked. The Design Inspector, using the device linking tables, will look for any triggers that will not work as the necessary links are not in place.

What HCA knows of the Insteon network

The Insteon network is expressed in the contents of the link databases in each device. For example, when you have linked a lamp module and a ControlLinc, when you press the linked button on the ControlLinc, the lamp comes on at a certain level and rate. That level and rate are established when you performed the linking.

If you have read all the linking databases of all your devices and you keep them up to date – that is, if you create links using the manual method you reread the network using the Network Capture dialog – then HCA can track the state changes of your devices fairly accurately. If the linking databases that HCA saves with your design file are different than what is in the devices then HCA can't keep its state correct.

Let's take an example: Suppose that you have a KeypadLinc linked to a SwitchLinc. You press a button on the KeypadLinc. The SwitchLinc comes on - but at what level? If HCA has the linking databases of the KeypadLinc and the SwitchLinc it can tell what level it went to and make sure that the HCA state is current with the SwitchLinc. Without the linking databases HCA could know that the SwitchLinc came on (due to the ACK message it sends) but not at what level.

Another case where the HCA state may get out of sync with Insteon devices is if you manually dim a device. Even if the device is linked to another device so that they both dim together, the Insteon commands don't provide enough information for HCA to know what level they are at when you stop dimming.

Hint: You can always request the status of an Insteon device to find out its actual state. This can be done from a Visual Program using the Test or GetStatus element. It can also be done from the user interface by right-clicking on the device and selecting 'Get Status' from the popup menu.

Hints and Tips

Multiple Interfaces

Don't forget that HCA can use multiple automation interfaces simultaneously. In this way you can use X10, wireless and IR devices along with your Insteon switches and keypads in your automation design. For example, a HCA program, started from an Insteon keypad trigger, can send commands to both UPB devices and X10 devices. Or a wireless motion sensor can be used to start a program that controls Insteon devices. In this way HCA can bridge all your automation technologies. You may want to look at the Protocol Bridge feature if you find you are using devices of different technologies that want to work together.

Insteon PowerLinc Support for X10

While the Insteon PowerLinc supports X10, if you have many legacy X10 devices, especially those that use the most primitive form of dimming, you may find that the Insteon PowerLinc doesn't dim them as smoothly as you would like. This is due to the X10 implementation capabilities of the Insteon PowerLinc. If this is a problem you could use an X10 interface like the CM15 for X10 sends and receives and use the Insteon PowerLinc for Insteon messages only.