Niagara$^{AX-3.x}$ Honeywell EvoHome Room Control System

Driver Guide

TRIDIUM EUROPE

Contents:

This is a 72 page document at A4

Preface

This is the “Driver Guide” document of the EvoHome driver for the NiagaraAX framework. The following main sections are in this document:

- “Compatibility and Installation”
  Explains EvoHome devices/protocols supported, as well as the NiagaraAX platform, software, licensing requirements, limitations and known problems.

- “EvoHome Driver Quick Start”
  Provides several quick procedures for online station configuration to add a EvoHome Network, EvoHome Devices and EvoHome proxy points.

- “NiagaraAX EvoHome Concepts”
  Provides concepts behind the EvoHome driver, including all major components and views.

- “EvoHome Use Cases”
  Use Cases are included in this guide to give some examples of typical applications.

- EvoHome Plugin Guides”
  Provides brief summaries of the different EvoHome manager views, each with links back to the more detailed concepts section.

- “EvoHome Component Guides”
  Provides brief summaries of the different EvoHome components, most with links back to the more detailed concepts section.

EvoHome terms

The following list of terms and abbreviations is specific to EvoHome usage in NiagaraAX, and covers entries used in this document. For general NiagaraAX terms, see the Glossary in the *User Guide*.

- The **EvoHome** Room Control System is a wireless "Smart Digital Individual Room Control System" designed for easy installation. It is a control system for radiators, underfloor heating and mixing valves in home or office environment with optional controls for boiler and heat pump. It is designed and produced by the Environmental and Combustion Controls Residential (ECC (Residential)) division of Honeywell Automation and Control Solutions (ACS).

- A Multi-zone controller (**EvoTouch**), which is part of the EvoHome individual room control system, provides a very explanatory touch-screen display for intuitive operation by finger tip or touch-pen. Available both as a table or wall device, a total of up to eight individual temperature zones and time programs can be set up.

- The Residential Network Protocol (RNP) is intended to be a Honeywell Building Controls (HBC) worldwide communications protocol for use in residential applications. Its purpose is to standardise message packet structure and the encoding of specific data items throughout HBC worldwide, making it easier for home control/automation systems to share information.

- EvoHome uses a proprietary RF communications system called **RAMSES II**. RAMSES (Room Apartment Manager System Engineering Specification) defines the Honeywell Residential RF system for Europe. It operates in the 868MHz frequency band with a maximum duty cycle of 1%. RAMSES II is a system that conforms to the *Residential Network Protocol (RNP).*

- The EvoTouch advanced comfort controller is an IONA device conforming to the *'IONA Remote Access Protocol'* which has 2-way 868MHz RF communication and is based on the *Ramses II system*

- The **EvoHome Network** is the NiagaraAX driver network containing one or more EvoTouch Systems.

- The **EvoTouch System** is a system comprising an EvoTouch controller and up to 8 associated zones.

- The **EvoHome Zone** contains one or more points and devices such as temperature setpoints and radiator heating controller devices

EvoHome FAQs

The following are frequently asked questions (FAQs) about the NiagaraAX EvoHome driver:

Q: Can I install more than one EvoHome Network in the NiagaraAX station?

A: Yes. The EvoHome Network follows the normal NiagaraAX principles in that more than one can be installed providing that you have managed your communications port resources and license requirements. The maximum number of serial RS232 interfaces and hence the maximum number of EvoHome Networks that can be configured on a HAWK/JACE is 3.

Q: What is the range of the RS232 connection and can you use RS232 extenders to place the HGS80 farther away from the HAWK/JACE?

A: The HGS80 Mounting Instructions (ref:MU1H-0475GE51 R0610) specifies that when using the recommended serial cable (LiYCY (0.5 mm^2) twisted, shielded pair type with drain wire) the maximum length and range of the connection is 2m. The interface presentation is 3 cores (TXD, RXD and GND) and therefore RS232 extenders could be used to gain extra distance for the interface connection.

Q: My EvoHome application is a small exclusive hotel which has an EvoTouch controller with three room zones for each suite. I allow the guests to adjust their own zone temperatures and time schedules while they are staying at the hotel but how can I automatically reset the schedules to a default condition after they have vacated the suite?

A: The EvoHome driver contains a default schedule export facility which can be programmed to run independently for each room zone and for the DHW. It is a simple process to create one or more default room and DHW schedules and set the exporter to automatically transmit them either manually, daily or on a periodic interval.

Q: Is it possible to get an alarm at the HAWK/JACE if it “loses” communication with the EvoTouch controller?

A: Yes. A NiagaraAX alarm will be raised if the driver does not receive responses to requests that it sends to the Controller. Another NiagaraAX alarm will be raised if communications with the HGS80 fails.

Q: When I first add an EvoHome network into the NiagaraAX “drivers” container and perform an EvoTouch system discovery, I do not see all the EvoTouch systems in the discovered pane?

A: When the driver first starts it listens to all the messages it receives from all systems and devices on the wireless RF network. The driver then begins to build a database of EvoTouch system serial numbers which will be used in the discovery process. If you are too quick in performing the EvoTouch system discovery then it is likely that not all systems have yet been detected. Try again after a minute or two and it will also help if you exercise any devices to force them into sending an RF signal.

Q: My EvoTouch system discovery has identified many EvoTouch systems and I do not know which one I should be using. All I see is a list of EvoTouch system serial numbers?

A: The driver can only identify EvoTouch systems by their serial number (Device ID). Suggest that you go to the EvoTouch controller that you wish to use, read its Device ID and select that one from the discovered pane.

Q: The discovery has not found some of my EvoHome Wireless Devices such as the HR80. Why not?

A: Some of the Wireless Devices are not fully identified when the discovery takes place. These devices will be added to the database when they transmit their next RF communication.

Q: Can I repeat the discovery after modifications have been made to the EvoTouch controller such as adding another zone?

A: Yes.

Q: I discovered and correctly added proxy points into my Zones but when I look at the points their 'Out' slots are displaying a {stale} status. Why is this?

A: When each discovered EvoHome object gets added as an EvoHome proxy point, their 'Out' slot will initially display {stale}. This is because the driver knows that this point exists but it does not represent a current value or condition. After a period of time the point will go to an {ok} status when the current value has been received.

Q: Why do some points such as Boiler Demand and Upper Setpoint Limit in the EvoTouch controller remain stale for a long time?

A: The EvoTouch controller only transmits some of its point data every 60 minutes unless there has been a change to it.

Q: I have adjusted the zone schedule and when I save it I get an "Invalid Schedule" dialogue showing a 'Schedule Error. Exception Raised'. Why?

A: The EvoTouch controller only supports 42 switching periods per week for both DHW and Room Zone schedules.

Q: When I set the time in the EvoTouch controller using the Menu…Setting Menu…Time/Date Setting, the controller time was changed OK but the next time I looked at the controller, the time had reverted back to its old setting. Why is this?

A: As part of its routine request cycle, the driver will update each EvoTouch system controller with its NiagaraAX station's current date and time. This ensures that all the systems are synchronised to the same time. You should go to the NiagaraAX station platform, update its time and date and the EvoTouch controller will automatically follow it.

Q: The NiagaraAX alarm database is listing a "Zone Ambient Temperature Sensor Communication Fault" from the EvoTouch controller's Fault Logbook. However the "Temperature" proxy point value displayed under the zone's Wireless Devices - Radiator Controller device in the driver hierarchy is showing a normal {ok} value. Why is this?

A: It looks like the Radiator Controller in that zone has completely failed or for some reason it has gone out of RF range of the EvoTouch controller. The EvoTouch controller has identified the failure because it is normally 'bound' to the device and as such is monitoring the device's messages and health. It has raised a fault in its Fault Logbook and a NiagaraAX alarm has been consequentially raised. However the Radiator Controller device in the driver hierarchy is updated only by unsolicited messages from the device and if the device has failed or gone out of range then the driver will have received no change from the last valid update it received from the device.

Compatibility and Installation

This section has the following main subsections:

- Compatibility
- License requirements
- Software installation
- EvoHome system configuration
- EvoHome to HAWK/JACE connection
- Limitations and known problems

Compatibility

The NiagaraAX EvoHome driver has the following compatibility criteria:

- NiagaraAX platform compatibility
- EvoHome system compatibility
- EvoHome monitoring and control compatibility
- EvoHome network compatibility

NiagaraAX platform compatibility

The EvoHome driver will function on all NiagaraAX platforms that support serial communications. NiagaraAX-3.6 or later is required.

EvoHome system compatibility

The EvoHome driver has been designed and tested for use with the EvoHome wireless room control system. It is compatible with the EvoHome protocol documentation. The EvoHome driver is compatible with the following EvoHome devices and software versions:

- HGS80 Serial Interface:
  16 November 06 V1.01 HGI80-Test*

- EvoTouch Controller:
  Application Software Version: 23 11 May 2012
  Bootloader Software Version: 5 Jul 28 2010
  Ext Module Software Version: not installed

- Radiator Controller (HR80)
- Underfloor Heating Controller (HCE80)
- Relay Unit (BDR91A)
- Room Sensor (DT92)
- Room Sensor (HCW82/HCF82)
- DHW Sensor (CS92A)
- Outdoor Sensor (HB85)

For more details about accessing EvoHome system software versions see “About EvoHome System Information and Versions” in the ‘NiagaraAX EvoHome Concepts’ section.

EvoHome monitoring and control compatibility

The EvoHome driver has been designed and tested to support the following monitoring and control functionality in the EvoHome system. This includes the following:

- EvoHome Monitoring
- EvoHome Controls

EvoHome Monitoring:

A number of items of EvoHome information can be monitored. These are as follows:

EvoTouch Controller:

Current Mode	Current [Time/Date]	Password Mode
Outdoor Temperature	Boiler Demand	Max Valve Position
Fault Logbook	Controller Software level	

Domestic Hot Water Zone:

Current State	Current [Time/Date]	Schedule
DHW Setpoint	DHW Setpoint Differential	DHW Temperature

Room Zone:

Current Mode	Current Duration	Current [Time/Date]
Setpoint	Temperature	Window Function
Local Operation	Lower Setpoint Limit	Upper Setpoint Limit
Schedule		

Wireless Device: Radiator Controller (HR80):

Setpoint	Valve Position	Battery State
Temperature		

Wireless Device: Underfloor Heating Controller (HCE80):

Heat Demand Boiler	Valve Position

Wireless Device: Boiler/Zone Actuator (BDR91A):

Heat State

Wireless Device: Room Sensor (DT92):

Temperature	Battery State

Wireless Device: Room Sensor (HCW82/HCF82):

Temperature	Battery State	Setpoint Offset
Digital Input		

Wireless Device: DHW Sensor (CS92):

DHW Temperature	Battery State

Wireless Device: Outdoor Sensor (HB85):

Temperature	Brightness	Battery State
Windspeed		

EvoHome Controls:

A number of actions or overrides can be initiated by the driver. These are as follows:

Network:

Message to all systems	Operating Mode Override to all systems	

EvoTouch Controller:

Password Mode	Operating Mode Override	Message
Time synchronisation (Auto)		

Room Zone:

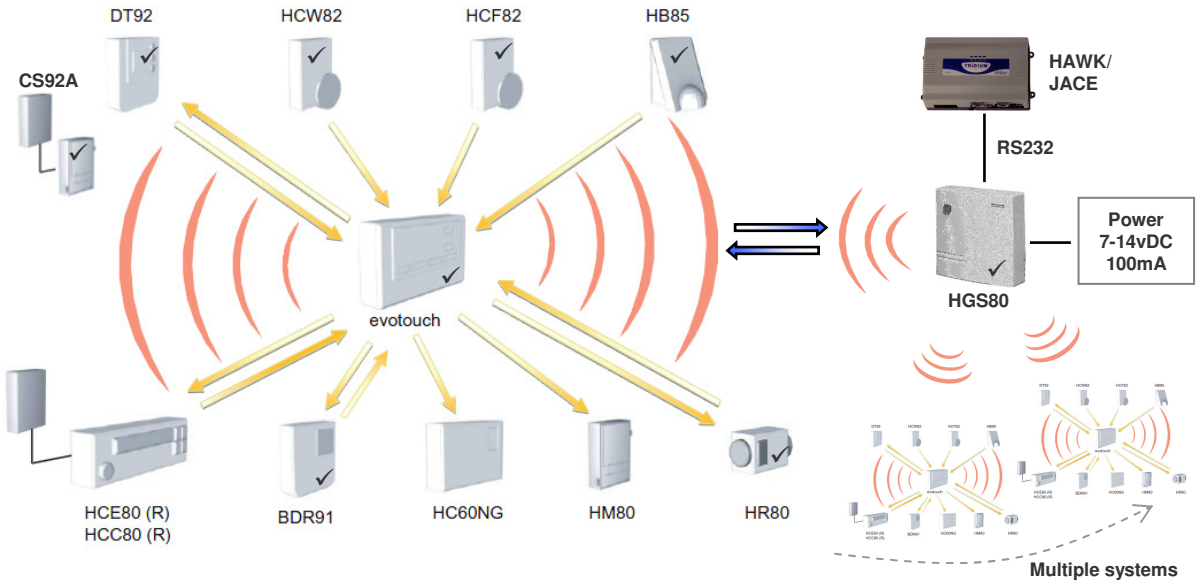
Setpoint Override	Schedule	Window Function
Local Operation	Lower Setpoint Limit	Upper Setpoint Limit

Domestic Hot Water:

DHW Command	Schedule	DHW Setpoint

EvoHome network compatibility

The following EvoHome network arrangements are supported with NiagaraAX connections as illustrated in Figure 1-1.



✓Confirmed compatible EvoHome devices used during testing.

- The HGS80 is an EIA-232 (RS-232) Gateway Interface which is available as a device in the EvoHome system.
- An alternative Gateway interface is available called the HGI80 which is identical in operation to the HGS80 but provides a USB interface connection instead of RS-232 and is powered through the USB connection. The HAWK/JACE does not support USB connections which make the HGI80 device unsuitable for this driver implementation.
- After the HGS80 is connected, it will receive every RAMSES RF message in the EvoHome system and send it via the serial RS-232 port to the HAWK/JACE

Figure 1-1: EvoHome network compatibility

License requirements

To use the NiagaraAX EvoHome driver, you must have a target NiagaraAX host (HAWK/JACE) that is licensed with the "honeywellEvoHome" feature, as well as the "serial" feature. In addition, the "honeywellEvoHome" feature may have other device limits or proxy point limits.

Software installation

From your PC, use the Niagara Workbench 3.*6.nn* or higher installed with the "installation tool" option (checkbox "This instance of Workbench will be used as an installation tool"). This option installs the needed distribution files (*.dist* files) for commissioning various models of remote HAWK/JACE platforms. The dist files are located under your Niagara install directory under a "sw" subdirectory. For more details, see "About your software database" in the *Platform Guide*.

Apart from installing the 3.*6.nn* or higher version of the Niagara distribution in the HAWK/JACE, make sure to also install the *honeywellEvoHome.jar* and doc*honeywellEvoHome.jar* modules too, plus any modules shown as dependencies. For more details, see "About the Commissioning Wizard" in the *JACE NiagaraAX Install and Startup Guide.* See the next section "EvoHome System configuration" for system configuration and see the section "EvoHome to HAWK/JACE connection" for cabling information.

The software installation comprises the following modules:

- honeywellEvoHome.jar
- docHoneywellEvoHome.jar

EvoHome system configuration

There is no configuration required in the EvoHome system to enable the EvoHome driver.

EvoHome to HAWK/JACE connection

Driver communications is via RS-232 between a HAWK/JACE serial port and an HGS80 EIA-232 Gateway Interface device, using a cable as shown in Figure 1-3.

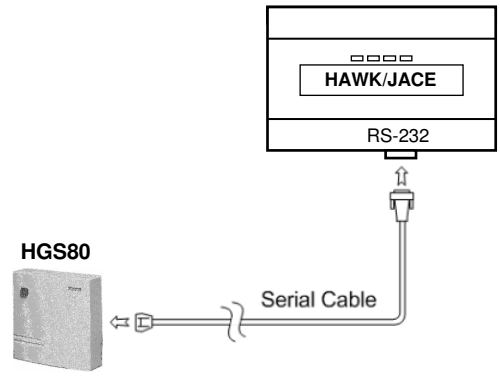
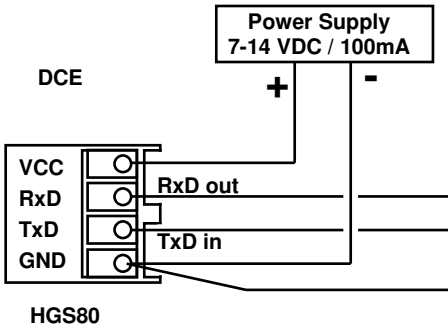


Figure 1-3: HGS80 to HAWK/JACE serial cable connection

The serial cable must be an LiYCY (0.5 mm^2) twisted, shielded pair type with drain wire, maximum length 2m (6ft). (Ref - HGS80 Mounting Instructions (ref:MU1H-0475GE51 R0610)) The HGS80 end must be properly terminated to the HGS80 screw connectors, with the HAWK/JACE end typically terminated to a DB-9F (socket) connector for its RS-232 port. The presentation of the HGS80 is of a Data Circuit-Terminating Equipment (DCE). Pinouts for the cable are shown in Figure 1-4.



DTE

Female DB-9	
Pin	Signal
1	DCD
2	RD
3	TD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	Not Used

Figure 1-4: Pinouts for Serial Cable

After you connect this serial cable, the HAWK/JACE is now ready for EvoHome integration, as described in the rest of this document. See the next section “EvoHome Driver Quick Start” for a series of task-based procedures.

Limitations and known problems

Limitations

Here are a number of limitations in the driver:

Known problems and observations

Here are known problems and observations of the driver:

Schedule Period Time Restriction

For both the zone and DHW schedules avoid period start or end times between 02:56 and 02:59 inclusive. A period that ends at 02:55 and a period that starts at 03:00 are both OK.

Quick Start

This section provides a collection of procedures to use the NiagaraAX EvoHome driver to build a HoneywellEvoHomeNetwork (EvoHome network) with proxy points. Like other NiagaraAX drivers, you can do most of the configuration from special "manager" views and property sheets using Workbench.

Note: *First see "Compatibility and Installation" for licensing and software requirements.*

These are the main quick start subsections:

- Add and configure the HoneywellEvoHomeNetwork
- Add EvoTouch Systems

Add and configure the HoneywellEvoHomeNetwork

- Add the HoneywellEvoHomeNetwork
- Configure the HoneywellEvoHomeNetwork communication parameters

Add the HoneywellEvoHomeNetwork

The HoneywellEvoHomeNetwork is the top-level EvoHome component in the station.

To add a HoneywellEvoHomeNetwork in the station

Step 1 Double-click the station's **Drivers** container, to bring up the **Driver Manager**.

Step 2 Click the **New** button to bring up the 'New network' dialogue. For more details, see "Driver Manager New and Edit" in the *Drivers Guide*.

Step 3 Scroll to select "Honeywell Evo Home Network," Number to Add: 1 and click **OK.**
This brings up a dialogue to name the network.

Step 4 Click **OK** to add the Honeywell EvoHome Network to the station.

You should have a HoneywellEvoHomeNetwork named "HoneywellEvoHomeNetwork" (or whatever you named it), under your Drivers folder, showing a status of "{fault}" and enabled as "true."

After you configure the HoneywellEvoHomeNetwork - communications parameters, the status should change to "{ok}".

Configure the HoneywellEvoHomeNetwork

In the HoneywellEvoHomeNetwork property sheet you must define several parameters for communications.

To set the HoneywellEvoHomeNetwork communications parameters

To set the communications parameters for a HoneywellEvoHomeNetwork:

Step 1 Right-click the HoneywellEvoHomeNetwork and select **Views > Property Sheet**.
The **Property Sheet** appears.

Step 2 Expand the **Serial Port Config** slot.
Set the properties for the HAWK/JACE serial port used as:

- Port Name: none — Enter the HAWK/JACE RS-232 port being used, such as COM1 or COM3
- Baud Rate: Baud115200
- Data Bits: Data Bits8
- Stop Bits: Stop Bit1
- Parity: None
- Flow Control Mode: [none ticked]

Note: *Ensure that the 'Flow Control Mode' options selection are [none ticked]. All necessary communication flow control configuration has been set correctly within the driver code.*

Step 3 Click the **Save** button.
For further details on the HoneywellEvoHomeNetwork, see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

Note: *At this stage you can check that you are communicating with the HGS80 interface as follows:*

*Step 1: In the Nav side bar, expand (click on the + sign) the HoneywellEvoHomeNetwork to expose the **Serial Interface** slot.*

*Step 2: Right-click the Serial Interface and select **Actions > Change Led State.** The **Change Led State** dialogue appears.*

*Step 3: Make a selection from the choices (Off, On, Blink, Flash, Rev Flash, Flashx1, Flashx2, Flashx3, Flashx4 and Flashx5), click **OK** and verify that the LED on the HGS80 interface operates accordingly.*

You should now add EvoTouch systems to the EvoHome network. Please see the next section, "Add EvoTouch Systems".

Add EvoTouch Systems

After configuring the HoneywellEvoHomeNetwork you must use online discovery to find and create EvoTouch Systems under the HoneywellEvoHomeNetwork.

Note: *Online discovery is the only means by which EvoTouch systems can be added to the EvoHome Network. Each EvoTouch system comprises a single EvoTouch controller. The EvoTouch controllers and their serial numbers that are in range will be discovered although it may be necessary to wait for a few minutes in order to collect all of them.*

This section provides quick start procedures for these tasks, as follows:

- Using online Discover to add EvoTouch Systems.

Note: *For general information, see the "About the Device Manager" section in the* Drivers Guide.

Using online Discover to add EvoTouch Systems

Ensure that the HAWK/JACE is connected to the EvoHome network via the HGS80 EIA-232 Gateway Interface device. This is the only way to populate the station with the necessary configured EvoTouch systems. Use the following procedures:

- To discover EvoTouch Systems
- To add discovered EvoTouch Systems

To discover EvoTouch Systems

Perform this task to discover EvoTouch systems.

To discover EvoTouch systems:

Step 1 In the Nav side bar, right-click the **HoneywellEvoHomeNetwork,** and select **Views > Honeywell EvoHome System Manager** to bring up the **EvoHome System Manager.**

Step 2 Click the **Discover** button to bring up the **Discovery Mode** dialogue.

Note: *There are two modes of discovery, "All Evotouch Systems" and "Evotouch Systems in Serial Number Range". If you know the Serial Number(s) of the system(s) that you want to discover then you should select the "Evotouch Systems in Serial Number Range" mode because this will allow you to target the discovery to just those systems and save unnecessary discovery time. If you are unsure of the serial numbers, or wish to select from all the systems within range then you should select the "All Evotouch Systems" mode.*

Step 3 Select either 'All Evotouch Systems' or 'Evotouch Systems in Serial Number Range' mode option and click 'Finish' or 'Next'.

Step 4 If you chose the 'Evotouch Systems in Serial Number Range' option you will see the Inclusive Serial Number Range dialogue where you should enter the 'Start' and 'End' range serial numbers in the two entry boxes separated by the double chevrons **»**.

Note: *These numbers are inclusive so that if you know the exact serial number of the system you are discovering then you can enter the same serial number in both start and finish boxes and the discovery will only target that system.*

The driver interrogates its internal database and a progress bar appears at the top of the view.

When the discovery job completes, discovered EvoTouch systems are listed in the *top pane* of the view, in the "Discovered" table. Each EvoTouch system occupies one row. The bottom pane, labelled "Database," is a table of systems that are currently mapped into the Niagara station—initially, this table will be empty.

Note: *The serial number, controller type, installed software version and its version date of each of the discovered EvoTouch system is displayed in the Discovered table. In addition, a test is made against the discovered software version and its date to give an indication (Software Valid) as to whether the controller's software is at a level where it can be added to the database.*

Note: *The 'JobService' under the Services container in the station maintains a record of all the Jobs including the discovery and add to database jobs. You can investigate the details of individual jobs for diagnostic purposes.*

Note: *EvoTouch systems with serial numbers 0 and 1 will <u>not</u> appear in the top 'Discovered' pane of the view although if found they will be identified as invalid in the relevant Job Log of the 'JobService'. If an EvoTouch system with either a 0 or 1 serial number is identified then you should contact the Evo service department.*

For more details, see "About EvoHome System Information and Versions" in the 'NiagaraAX EvoHome Concepts' section.

To add learned systems, see the next section: "To add discovered EvoTouch systems".

To add discovered EvoTouch Systems

Perform this task to add discovered EvoTouch systems to your station database.

To add discovered EvoTouch systems:

Step 1 You can map a discovered EvoTouch system into the station in a number of ways:

- Drag it from the Discovered pane to the Database pane (brings up an **Add** dialogue).
- Double-click it in the Discovered pane (also brings up an **Add** dialogue).

This works the same as in other driver's "Device Manager" views.

Step 2 When the **Add** dialog appears, you can edit the configuration of the EvoTouch system before it is added in the Niagara station. Initial property values are determined from the system (and are typically acceptable).

- For general details, see the section "About Device Discover, Add and Match (Learn Process)" in the *Drivers Guide*.

Step 3 When you have completed any configuration edits, click **OK**.

The EvoTouch system is added to the station and appears listed in the Database pane—and is now dimmed in the Discovered pane. The discovery process will automatically continue to gather installation information from the selected system for some time after it is added to the database. When this has completed, discovered EvoHome points and Wireless Devices are listed under the EvoTouch system device.

Note: *When each discovered EvoHome object gets added as an EvoHome proxy point, their 'Out' slot will initially display {stale}. This is because the point has been obtained from 'internal templates' and does not represent a current value or condition. After a period of time the added point will go to an {ok} status when the current value has been received.*

Note: *This discovery process which automatically discovers **and** adds the points and devices, is different from the normal NiagaraAX driver online discovery where devices and points are manually added after discovery. You should therefore delete any devices and points which are not required after discovery has taken place.*

Note: *The 'JobService' under the Services container in the station maintains a record of all the Jobs including the discovery and add to database jobs. You can investigate the details of individual jobs for diagnostic purposes.*

NiagaraAX EvoHome Concepts

This section provides conceptional details on the NiagaraAX EvoHome driver, its components, including views and some interface examples. These are the main subsections:

- About EvoHome System Information and Versions
- About EvoHome to NiagaraAX Architecture
- About Discovery
- About Wireless Communications
- About Time
- About Password Mode
- About the EvoHome Cyclic Controller
- About the EvoHome Network
- The EvoHome System Manager
- About EvoHome Schedules
- The EvoHome Custom Scheduler
- The EvoHome Schedule Export Manager
- The EvoHome Schedule Import Manager
- About Schedule Range Checking
- About EvoHome Fault Logbook
- About EvoHome Alarm Source Info
- About Last Update Time
- Hierarchy Examples

About EvoHome System Information and Versions

You can inspect the software version level and system information of the EvoHome system as follows:

- **Serial Interface**
  Please see “Serial Interface” in “About the EvoHome Network” in the ‘NiagaraAX EvoHome Concepts’ section to access the Serial Interface software version.

- **EvoTouch Controller**
  The SYSTEM INFORMATION dialogue in the EvoTouch controller will give software version and Device ID information as illustrated in Figure 3-1.

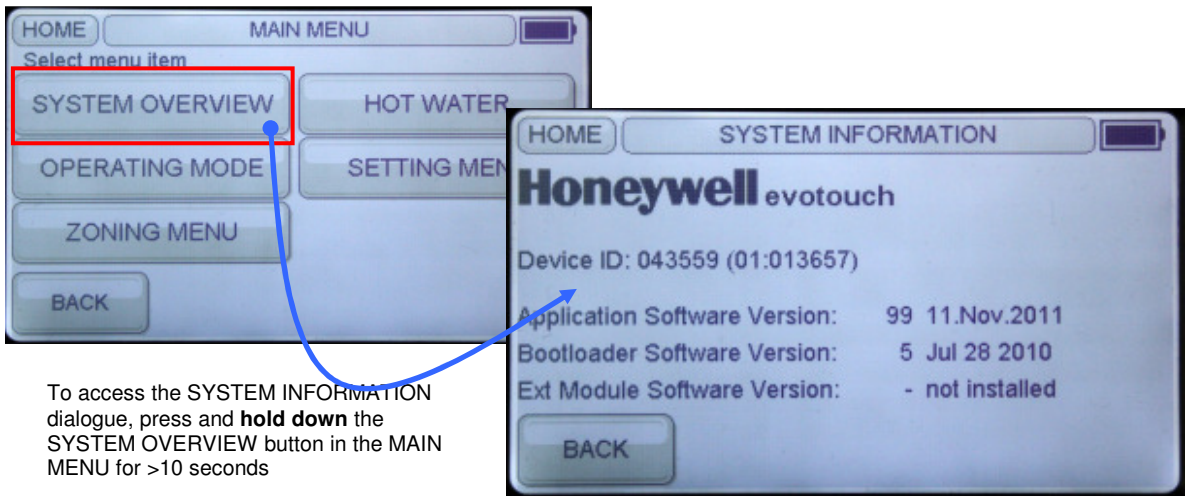


Figure 3-1: The System Information dialogue

About EvoHome to NiagaraAX Architecture

The EvoHome network architecture is a multi level approach where an EvoTouch controller system with one or more zones and remote Wireless Devices co-exist with other EvoTouch controller systems on a common wireless network

In the NiagaraAX integration, this network topology is presented under a station's EvoHome network and the driver communicates with all the EvoTouch controllers and receives data from many of the devices via the HGS80 serial interface.

Additionally, the standard NiagaraAX network architecture applies but unlike other serial-based polling drivers, this driver is dependent upon a polled message system to the EvoTouch controllers and an un-polled and unsolicited 'reception-only' message system with the other devices. Real-time data is modelled using EvoHome proxy points, which reside under EvoTouch System Points, Zones and Wireless Device folders.

Hierarchically, the component structure is as follows:

- **Network** (For example "Honeywell EvoHome Network")
  - **Folder** (For example "Default Schedules", "Message Command", "Operating Mode Command")
  - **Device** (For example "Serial Interface", "Evotouch System_13657")
    - **Point Device Extension** (Points Zones And Wireless Devices)
      - **Folder** (For example "Wireless Devices", Zones")
        - **Folder** (For example "Lounge", "Study", "Domestic Hot Water")
          - **Folder** (For example "Wireless Devices")
            - **Folder** ("Radiator Controller")
              - **Points** (For example "Temperature", "Battery State")
            - **Points** (For example "Setpoint", "Window Function")
            - **Composite Point Folder** (For example "Setpoint Command")
            - **Schedule**
      - **Composite Point Folder** (For example "Message Command")
        - **Points** (For example "Override Mode", "Current Mode")
      - **Points** (For example "Password Mode", "Outside Temperature")
    - **Log Book** (Fault Log Book)
    - **Schedule Device Extension** (Export and Import Schedule Manager**)**

In summary;

- The **EvoHome Network** is the NiagaraAX driver network containing one or more EvoTouch Systems as well as common network-wide functions such as Default Schedules, Operating Mode Commands and Message Commands
- The **EvoTouch System** is a NiagaraAX "Device" comprising an EvoTouch controller and in a suitable folder hierarchy, up to 8 associated room zones and one Domestic Hot Water zone. The system also includes common system components such as Outdoor Sensor, Boiler Actuator, Message and Operating Mode Command.
- An **EvoHome Room Zone** contains one or more points such as temperature setpoints and also the zone related Wireless Devices such as radiator heating control devices and sensors. Each zone also includes its related time schedule.

You can use the default "Honeywell EvoHome System Manager" view of the Network to *discover* and add EvoTouch systems, zones and proxy points.

About Discovery

The EvoHome driver Discovery method is different to most other NiagaraAX drivers. The EvoHome components such as the EvoTouch controller and wireless devices do not support a discovery mechanism. The EvoTouch controller is the only device in the system that can be interrogated by the driver. Most of the communications messages that contain monitor data are received on an ad-hoc 'unsolicited' basis from the controller and wireless devices. The Discovery process of this driver therefore has to generate the NiagaraAX proxy points and other data from this background 'noise' of communication. For this reason Discovery can only be carried out on an on-line system.

The concept of Discovery in the EvoHome driver is to firstly listen to all the unsolicited messages to create a list of EvoTouch controllers within wireless range, then request from selected controllers the zone data. Finally the driver automatically adds wireless device and point references into the correct zones from associated wireless device data that is again captured from unsolicited messages.

Instead of presenting the user with a list of potential data candidates which are added to driver devices, the Discovery process in this driver automatically populates the EvoTouch controller with its schedules, wireless devices and proxy points. If room zones, wireless devices and proxy points are not required then they should be deleted after auto-population.

The Discovery process in the EvoHome driver may be described in these stages:

- **Stage 1 Initial Background Discovery**

Once the Network has established communication with the RF serial Interface (HGS80) it collects unsolicited information in the background from the messages received by the interface. These messages include ID codes consisting of a 'RAMSES II' Type number and serial number. All the EvoTouch controllers are recorded and their serial numbers retained. It may take several minutes to obtain the serial numbers of all controllers within RF range of the interface. Controllers that have been discovered are listed in the "Database" pane when carrying out a discovery at Network level using the EvoHome System Manager. It follows from this that if the EvoTouch controller and associated devices are exercised to 'force' them into RF communications, this will help to speed up initial background discovery. To prevent the possibility of selection of spurious EvoTouch controller serial numbers caused by RF noise pollution, the driver, on discovery, will only list those controllers in the "Database" pane that have been obtained in the background within the last 60 minutes.

- **Stage 2 Discovery**

When the 'Discover' button is clicked and the range of controller numbers established from the user the driver requests specific software (firmware) version details from each EvoTouch controller that has been identified in the Initial Background Discovery. This is to provide the user with a list of controllers and show whether their level of firmware is valid for selection to add to the driver database. EvoTouch controllers that do not comply with a valid level of firmware cannot be added to the driver database.

- **Stage 3 Adding the EvoTouch controller to the database**

Once an EvoTouch controller has been selected for adding to the driver database, the driver interrogates the EvoTouch controller and requests the names of all the room zones and it creates zones in the driver with those names. It also creates a zone that represents the Domestic Hot Water. Each zone is then interrogated in turn for the devices that have been allocated to it within the controller and some device information concerning the nature of the device usage is obtained. Having completed the discovery process the discovered zones and wireless devices appear in the navigation tree.

The EvoHome driver contains a list of 'Preset' Wireless Devices which is used by the driver to pre-populate each EvoTouch system when the discovered systems are added to the database. The Wireless Devices are positioned in the controller hierarchy according to installation information that is received from the EvoTouch during this discovery. The points of these devices initially start in a {stale} condition

Some wireless devices will still not be discovered during this stage, but because the zones have been discovered, any unsolicited message that is received from a wireless device will be placed in the appropriate zone according to data that is in the received message.

About Wireless Communications

Wireless considerations

The 868MHz radio spectrum was recommended and adopted by various frequency management working groups as a wireless solution for the European Market. The European Telecommunications Standards Institute (ETSI) has developed standards for devices operating in the spectrum and governs their use. The respective radio spectrum is specific to the European market and falls within the 868.000 – 870.00 MHz frequencies and is separated into four frequency bands; G1, G2, G3 and G4.

All the radio transmitters in the EvoHome Room Control System components are classified as "Short Range Devices" or SRD's and as such they have a number of operational restrictions which include that they operate in shared bands and are not permitted to cause harmful interference to other radio services. All the devices operate in the G1 frequency band (868.000 – 868.600 MHz) and they are restricted to ≤25mW ERP (Effective Radiated Power) with a ≤1% Duty Cycle.

Due to the single channel band, to prevent excessive interference between devices, regulations require that the devices do not exceed a 1% transmission duty cycle. This means that each device can only be transmitting 1% of the time. This impacts on how fast the application in each device can send data over the air. The HGS80 serial interface is similarly restricted to the regulations and it is a throttle or regulator to the amount of traffic that the EvoHome driver can transmit to the EvoTouch controller. If the HGS80 is sent data at a rate faster than it is permitted to transmit over the air, then messages will fail.

Whilst the data transfer rate between the HAWK/JACE and HGS80 is 115200 Baud, this in no way represents throughput over the air. Messages will not be sent at a rate faster than typically one every 2 seconds and if the HGS80 calculates that its duty cycle regulation is being compromised then it will dynamically reduce its transmission rate over the air to compensate. The Network communications parameters, 'Ping Frequency', 'Response Timeout' and 'Inter Message Delay' are all relevant to this process as they all contribute to the rate at which messages are sent out to the HGS80. The default values have been established by experience and they should not be reduced.

The battery powered devices, which include the Outdoor Sensor (HB85), DHW Sensor (CS92A), Radiator Controller (HR80) and Room Sensor (HCW82) are subject to the same 1% duty cycle regulation but they also limit their transmission rate in order to maximise battery life. Messages from these devices are optimised so that some data points (such as a temperature value) report only on change of value and some data points (such as battery condition) are only transmitted on a time interval of several hours. This is important to appreciate in understanding how the driver builds its devices and points from unsolicited messages from these devices.

Request messages and Unsolicited messages

There are two types of message that the driver needs to handle; Request and Unsolicited. The driver can only send **Request** messages to the EvoTouch controller. The driver can however receive **Unsolicited** messages from all the wireless devices including the EvoTouch controller. The driver has no control over unsolicited messages other than it needs to be able to handle each one when it receives it on an ad-hoc basis.

Some of the request messages require the receiving device, which in this case is the EvoTouch controller to acknowledge with corresponding data and some of the request messages are unacknowledged. Some of the request messages send data to the controller such as in the case of time schedule transmission.

The driver uses the NiagaraAX 'Monitor Ping' to sequence and control the rate of request messages to the controller. For more details, see "About the EvoHome Cyclic Controller" in the 'NiagaraAX EvoHome Concepts' section.

About Time

The EvoHome driver synchronises the EvoTouch controller time with the current time of the NiagaraAX station on a regular basis as part of the Cyclic Controller's cycle. The driver will attempt to synchronise an EvoTouch controller at the '00 second point of the driver's current time (for example at 12:37:00) but latency in the communications infrastructure will naturally result in small time discrepancies between systems. Time synchronisation of an EvoTouch controller is carried out at periods of 60(-0/+10) minutes but the absolute time when this is carried out will depend upon the driver start time and the number of systems and other RF communications traffic.

When there is more than one EvoTouch system, the driver will attempt to synchronise each controller individually at the next '00 second point of the driver's current time. This will result in, for example that EvoTouch System_1 is synchronised at 12:35:00, EvoTouch System_2 is synchronised at 12:36:00, EvoTouch System_3 is synchronised at 12:37:00 and so on but if the communications system is busy then EvoTouch System_4 may wait to be synchronised at 12:39:00. When looking across all the EvoTouch Systems in the driver after the synchronisation has finished, it expected that synchronisation accuracy is within 10 seconds between all the systems and the NiagaraAX station

For more details, see "About the EvoHome Cyclic Controller" in the 'NiagaraAX EvoHome Concepts' section.

About Password Mode

The Evotouch controller has a feature to prevent unauthorised changes being made by enabling a password-protection mode. This mode is not part of the normal Evotouch features and is not documented in standard user or installation guides. It can nevertheless, be used by building managers and others and it is also supported by the EvoHome driver. There are two levels of protection possible:

- **Mode 1**

When Mode 1 protection is enabled, the entire user interface is locked when the screen-saver is active. The password has to be entered to gain access to change any features.

- **Mode 2**

When Mode 2 protection is enabled, program schedule and configuration changes are not possible without entering the password first.

  - Specifically, the following operations are possible without entering a password:
    Setpoint changes, overrides, activating holiday function, special day mode, economy mode, hot water on/off and access to zoning menu, main menu and system overview screens.

  - A password is required for the following:
    View/edit schedule, change operating mode, access zoning menu, setting menu, system configuration menu, special day menu, special day view/edit schedule, hot water menu, hot water view/edit schedule.

Note: *The default password is "evohome" (without quotes and is case-sensitive) and this default password is always active. It is possible to enter a new (user) password which would be active in addition to the default password. On a factory reset, password protection will revert to disabled and the user-defined password will revert to the default password.*

The EvoHome driver reads the state of the EvoTouch controller's Password Mode on a regular basis at periods of 60(-0/+10) minutes as part of the Cyclic Controller's cycle. For more details, see "About the EvoHome Cyclic Controller" in the 'NiagaraAX EvoHome Concepts' section.

About the EvoHome Cyclic Controller

The purpose of the cyclic controller is to 'time-order' the requests sent out to the EvoTouch controller to obtain data or write data to the controller to synchronise the current time. The cyclic controller is entered from each system via the NiagaraAX "Monitor Ping" providing that a discovery process is not in operation.

The common NiagaraAX "Monitor Ping" is a regular check by the driver that each "Device" under the Network level is still on-line and 'healthy'. The monitor ping sends a message expecting a reply and the result is recorded as the "Health" property of the Network. The monitor ping can only 'ping' NiagaraAX devices at Network level.

In this driver there are a number of devices such as the EvoTouch controller and its zones, that need a regular request cycle but they exist at a lower hierarchical level than the Network level. The monitor ping is unsuitable for these and therefore an EvoHome Cyclic Controller process has been added to this driver which controls the regular polling sequence of the controller and its zones of each EvoTouch controller system in the Network. The EvoHome Cyclic Controller sits at Network level and it is this that is 'pinged' by the NiagaraAX monitor ping thereby providing the 'Cyclic Controller' with a regular "clock" which it uses to step through a sequence 'cycle' for each of the zones in each of the connected controllers.

Each system has the following data requests sent to it:

- Regular request to get the "**Schedule Time Program Counter**" from the controller to see if any of its schedules have been changed
- Regular request to get the latest entry in the "**Fault Logbook**" from the controller to see if there has been any change
- Regular request to get the "**Current Operating Mode**" from the controller

- Request to get the "**Outdoor Temperature**" from the controller at 60(-0/+10) intervals
- Request to get the "**Password Mode**" from the controller at 60(-0/+10) intervals
- Send "**Current Time/Date**" to the controller at 60(-0/+10) intervals

The EvoHome Cyclic Controller cycle also follows the following regular sequence for individual zones:

~ EvoTouch System A Controller Zone
~ EvoTouch System A Room 1 Zone
~ EvoTouch System A Room 2 Zone
~ ----until--->
~ EvoTouch System A Room n Zone
~ EvoTouch System A DHW
~ EvoTouch System B Controller Zone
~ EvoTouch System B Room 1 Zone
~ EvoTouch System B Room 2 Zone
~ ----until--->
~ EvoTouch System B Room n Zone
~ EvoTouch System B DHW
~ ----until--->
~ EvoTouch System n Controller Zone
~ EvoTouch System n Room 1 Zone
~ EvoTouch System n Room 2 Zone
~ ----until--->
~ EvoTouch System n Room n Zone
~ EvoTouch System n DHW…

Repeat

At each zone and DHW the following data is requested:
- Current Setpoint (Room Zones)
- Current DHW Setpoint (DHW zone)
- Changed Schedule data (All Zones)
- Changed Fault Logbook data (All Zones)
- Current DHW Temperature (DHW zone)
- +optionally (if changes have been noted) to…
  - Import Zone Schedule
  - Import Fault logbook

About the EvoHome Network

The Honeywell EvoHome Network is the top-level component for the EvoHome driver in a station. On its property sheet (Figure 3-2), you can configure specific settings for accessing EvoHome systems on the connected serial interface.

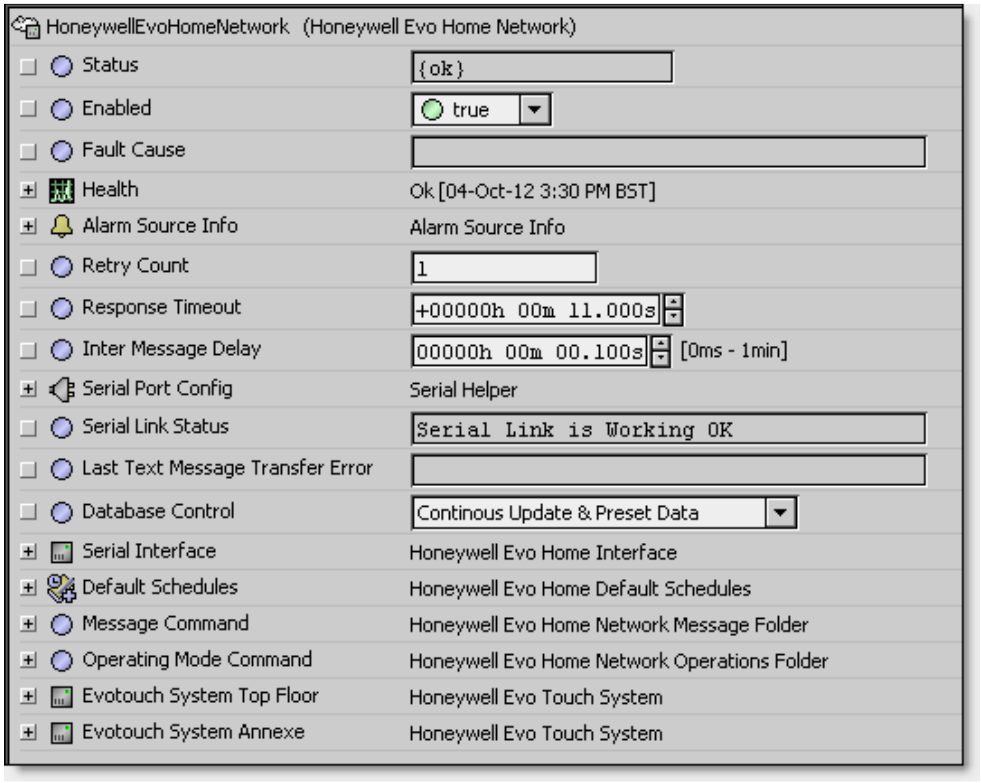


Figure 3-2: Property sheet of the Honeywell EvoHome Network

The following sections provide more details on Honeywell EvoHome Network properties and slots:

- EvoHome specific Network slots
- Common EvoHome Network slots
- EvoHome Network Action

EvoHome specific Network slots

In addition to Common EvoHome Network slots, the Honeywell EvoHome Network contains the following specific slots:

- **Serial Link Status**

If the Serial Interface ping fails then the Serial Link Status will display a “Serial Link No Communication” state. When successful communications are established it will display a “Serial Link is Working OK” state.

- **Last Text Message Transfer Error**

When a text message is sent to all EvoTouch systems from the driver’s Network level, a status response is received which indicates whether or not the transmission was successful. This slot shows details of the last transfer error.

- **Database Control**

The EvoHome driver contains a list of 'Preset' Wireless Devices which is used by the driver to pre-populate each EvoTouch system when the discovered systems are installed into the database. The Wireless Devices are positioned in the controller hierarchy according to installation information that is received from the EvoTouch during discovery. The points of these devices initially start in a {stale} condition. The Wireless Devices are:

HR80	HCE80	BDR Relay	DT92
HCW/HCF82	CS92	HB85	CH Valve
DHW Valve			

Some Wireless Devices (such as the HR80) cannot always be positioned in the controller hierarchy at discovery if the installation information does not define them. These devices are subsequently added to the hierarchy using preset information when unsolicited data is received from them.

The EvoHome driver also contains a list of 'Frozen' preset points which are always added to the EvoTouch system (such as Operating Mode and Password Mode points) when the discovered systems are installed into the database.

Here are the options for this control:

- **Continuous Update & Preset Data** — (Default) The driver uses the 'Preset' Wireless Device list at discovery and if any are received after discovery by Unsolicited data it 'Continuously Updates' the hierarchy.
- **No Update & Preset Data** — The driver uses the 'Preset' Wireless Device list at discovery but if any are received after discovery by Unsolicited data it will not 'Update' the hierarchy.
- **Continuous Update & No Preset Data** — The driver will not use the 'Preset' Wireless Device list at discovery but if any are received after discovery by Unsolicited data it 'Continuously Updates' the hierarchy.
- **No Update & No Preset Data** — The driver will not use the 'Preset' Wireless Device list at discovery and if any are received after discovery by Unsolicited data it will also not 'Update' the hierarchy.

Serial Interface

The connected HGS80 serial interface is represented by this frozen slot. On its property sheet (Figure 3-3), you can view some parameters of the interface and through some actions you can initiate some diagnostic activity.

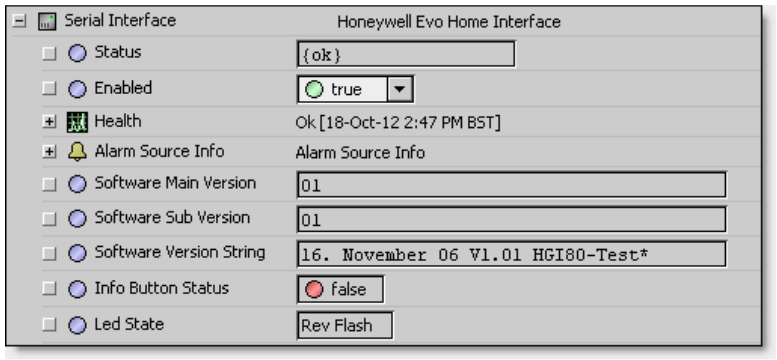


Figure 3-3: Property sheet of the Serial Interface

The Serial Interface property sheet contains the following specific slots:

- **Software Main Version**
  This is version information of the serial interface device

  Note: *You can get this and the remaining version information updated by using the "Get Software Version" action on the serial interface.*

- **Software SubVersion**
  This is version information of the serial interface device

- **Software Version String**
  This is version information of the serial interface device

- **Info Button Status**
  This shows the current state of the push-button on the serial interface (false/true)

- **Led State**
  This shows the current state of the LED on the serial interface

  Note: *You can change the LED state by using the "Change Led State" action on the serial interface.*

- **Default Schedules (Folder)**
  Default Schedules is a network level folder that contains the source of all the 'default' schedules which are exported by the 'Export Schedules' facility of each controller. A "Save Schedule in Default List" action is available on each EvoTouch schedule or EvoTouch Zone or DHW component to copy a schedule into the "Default Schedules" folder.

- **Message Command (Composite Folder)**
  'Message Command' is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX point types in an 'easy-to-use' wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

- **Operating Mode Command (Composite Folder)**
  'Operating Command' is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX point types in an 'easy-to-use' wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

Common EvoHome Network slots

The Honeywell EvoHome Network component contains the typical collection of slots and properties as most other network components. For general information, see "Common network components" in the *Drivers Guide*. The following sections provide additional details:

- Honeywell EvoHome Network serial port config properties
- Honeywell EvoHome Network status notes

- **Honeywell EvoHome Network serial port config properties**
  The Honeywell EvoHome Network has a Serial Port Config container found on the property sheet, containing the following properties:

  - Port Name — Enter the string for the COM*n* serial port (RS-232) used on the host platform. For example, enter COM1 or COM3.
  - Baud Rate — Selected from a drop-down list. Typically, the default 115200 baud is used.
  - Data Bits — Selectable as 5, 6, 7, or 8 bits. Typically, the default 8 data bits is used.
  - Stop Bits— Selectable as 1 or 2 bits. Use the default 1 stop bit.
  - Parity — Selectable as None, Odd, Even, Mark, or Space. Typically, the default None is used.
  - Flow Control Mode — **Do not** select any flow control for EvoHome protocol. (All necessary communication flow control configuration has already been set correctly within the driver code).

- **Honeywell EvoHome Network status notes**
  As with most "fieldbus" drivers, the status of the EvoHome Serial Interface is either the normal "ok", or less typical "down" or "fault" or "unackedAlarm" (fault might result from licensing error, or if a non-existent COM port is assigned to Serial Port Config). The Health slot contains historical timestamp properties that record the last network status transitions from ok to any other status. The "Fault Cause" property further explains any fault status.

  Note: *As in other driver networks, the Honeywell EvoHome Network has an available "Alarm Source Info" container slot. In addition, the Serial Interface also has an available "Alarm Source Info" container slot. You can use these to differentiate Honeywell EvoHome Network alarms and EvoHome Serial Interface alarms from other component alarms in the station. See "About network Alarm Source Info" in the Drivers Guide for more details and "About EvoHome Alarm Source Info" in the NiagaraAX EvoHome Concepts section for more details*

EvoHome Network Action

The Honeywell EvoHome Network has some actions as follows:

- **Ping**
  This action will initiate a Ping.

- **Synchronise All Fault Logs**
  This action will force the driver to synchronise the data in the NiagaraAX alarm database with the full contents of the Fault Logbook in all the EvoTouch controllers.

The EvoHome System Manager

The Honeywell EvoHome System Manager (Figure 3-4) is the default view for the Honeywell EvoHome Network. The operation of this manager is different from the typical "Device Manager" that would normally be found as the default view of a NiagaraAX Network component. See "About the Device Manager" in the *Drivers Guide* for general information.

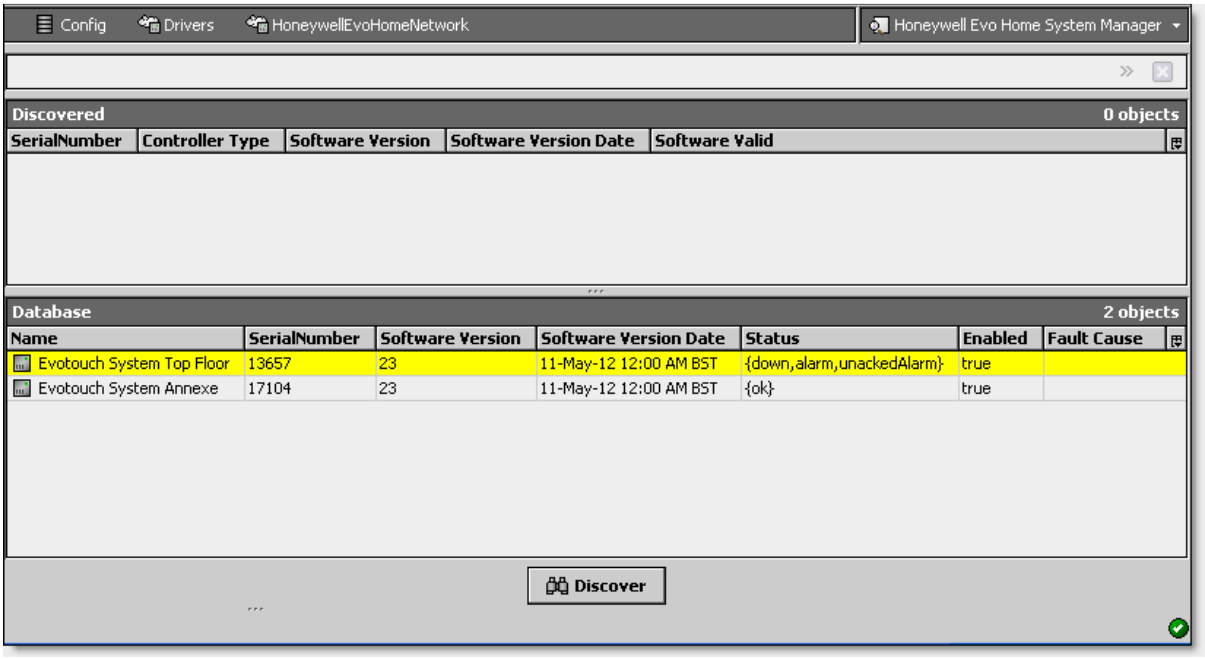


Figure 3-4: EvoHome System Manager is the default view of the EvoHome Network

Use the **Discover** button to discover and add EvoHome Systems, Points and Devices.

Note: *Online discovery is the only means by which EvoTouch systems can be added to the EvoHome Network using the 'Discover' button. The driver needs to be online in order that the internal database can continually collect device and point data.*

About EvoHome Schedules

Every room zone in the EvoHome System controller has a time schedule associated with it. The Domestic Hot Water zone has a DHW time schedule. The zone schedules have a maximum number of 6 switching periods per day and each switching period has an associated setpoint temperature value so that the zone may be set to different setpoint values throughout every day of the week. The DHW schedule also has a maximum number of 6 switching periods per day but instead of a setpoint value, each period has one of two boolean values; 'Off' or 'On'. Both Zone and DHW schedules are automatically imported into the NiagaraAX station when the driver initially starts its communications with the controller. When a change is made to any schedule in the controller, the station copy is updated as part of the driver's regular cyclic controller's request cycle. For more details, see "About the EvoHome Cyclic Controller" in the 'NiagaraAX EvoHome Concepts' section. The schedules are stored in the driver and are visible as NiagaraAX component representations in the "Schedule" slot of every zone.

In the driver, the Room Zone schedules are represented as NiagaraAX "Numeric Schedules" and the DHW schedules are represented as NiagaraAX "Boolean Schedules", in that they contain weekly time periods and associated numeric or boolean values. The visual layout of the schedules is different when seen in the controller to that displayed in the 'Scheduler View' of the NiagaraAX component. The two representations of a 'Zone' schedule are illustrated in Figure 3-5.

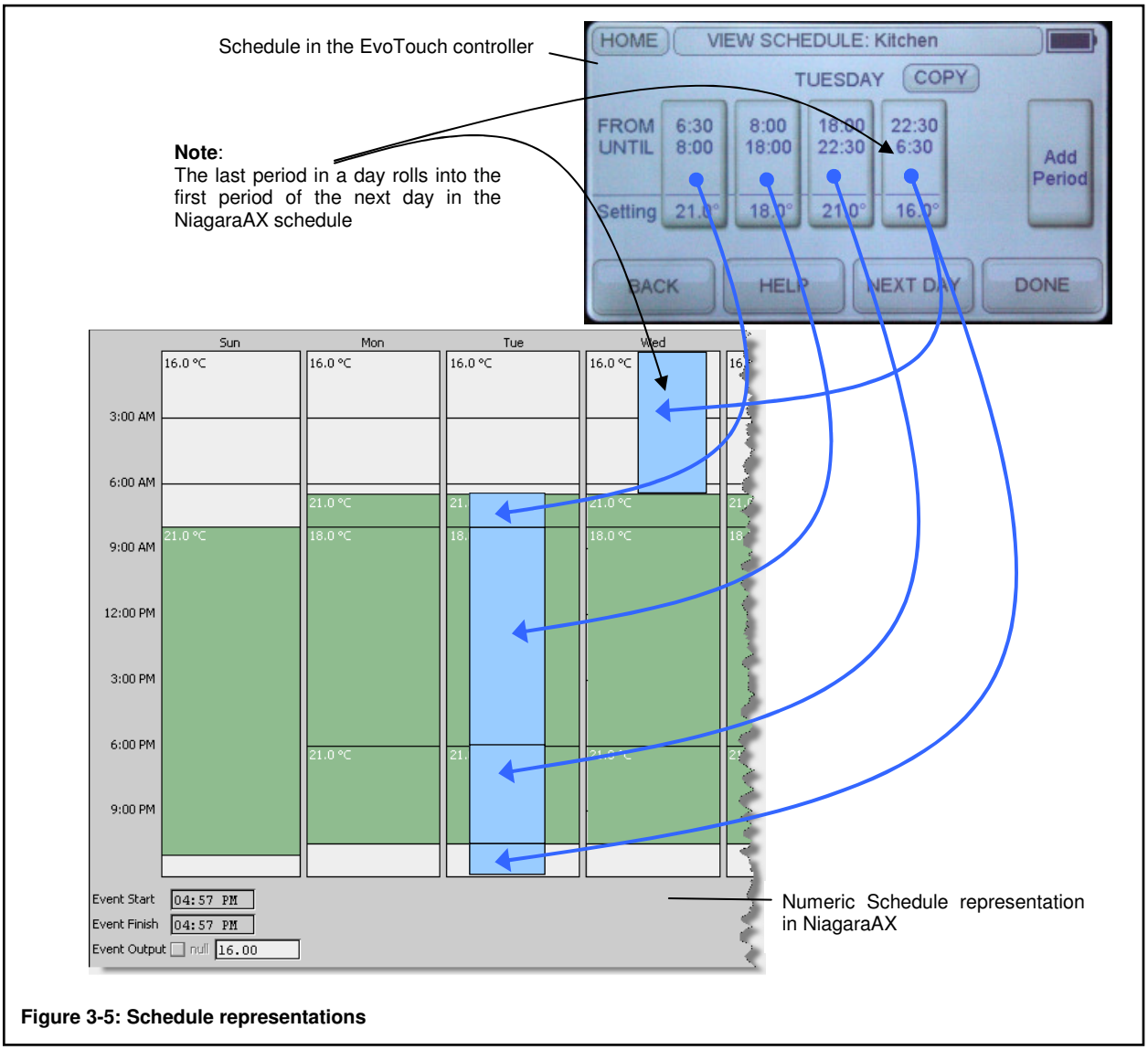
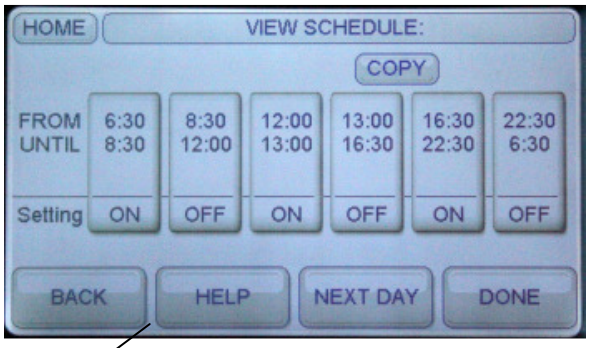


Figure 3-5: Schedule representations

The DHW schedule is illustrated in Figure 3-6.



Schedule in the EvoTouch controller

Boolean Schedule representation in NiagaraAX

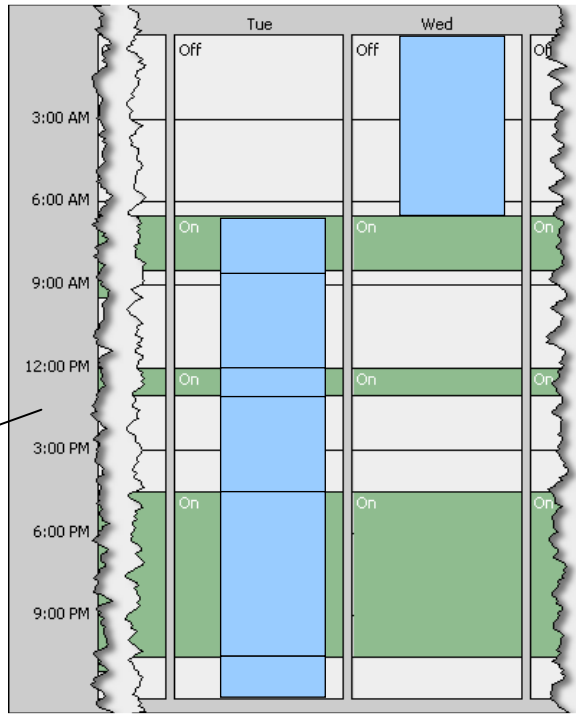


Figure 3-6: DHW Schedule representation

See "The EvoHome Custom Scheduler" and "About Schedule Range Checking" in the NiagaraAX EvoHome Concepts section for more details

The EvoHome Custom Scheduler

The Honeywell EvoHome Custom Scheduler (Figure 3-7) is the default view for the Honeywell EvoHome Schedule. The operation of this view is different from the typical "Scheduler" that would normally be found as the default view of a NiagaraAX Schedule component. The Honeywell EvoHome Custom Scheduler is available in both the Room Zones and the Domestic Hot Water Zone.

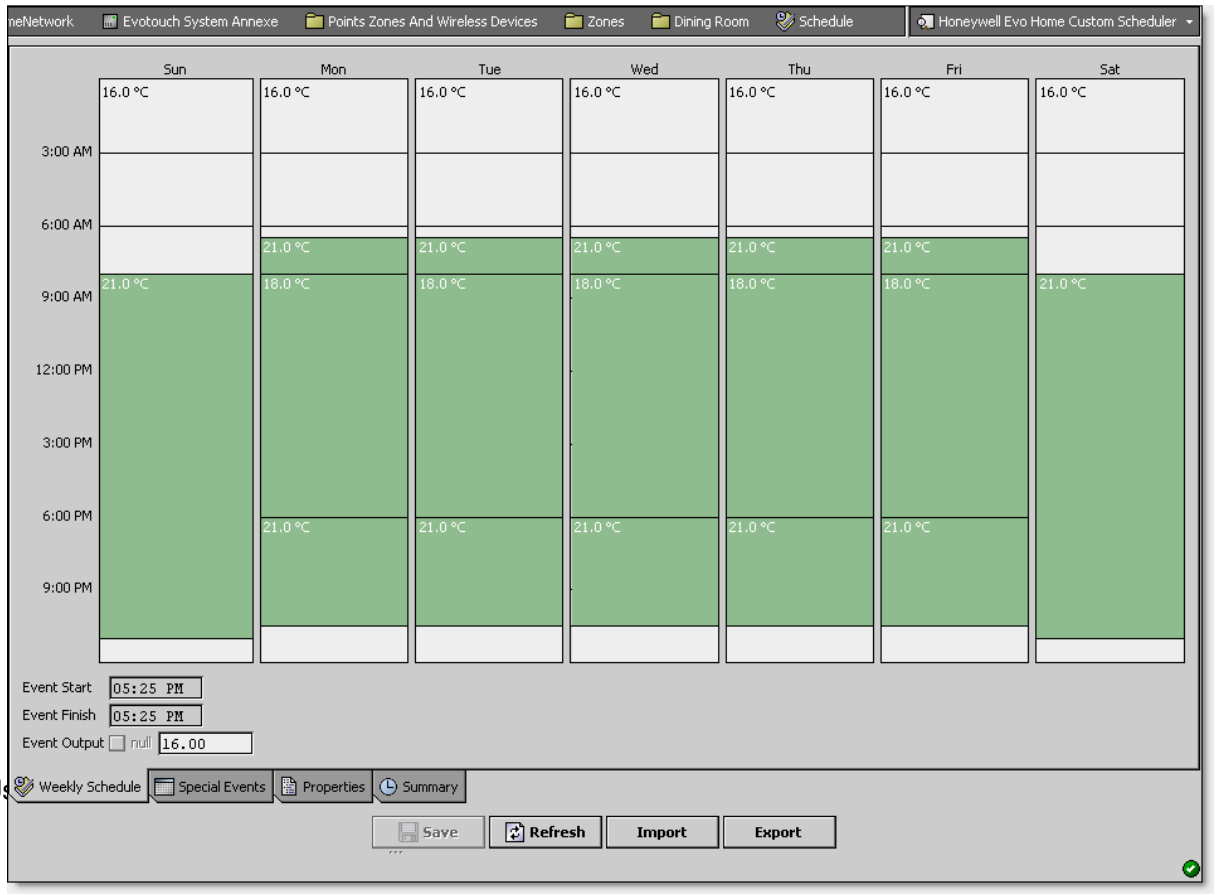


Figure 3-7: EvoHome Custom Scheduler is the default view of the EvoHome Schedule

Use the **Export** button to export any changes made to the scheduler to the EvoTouch controller.
Use the **Import** button to import the schedule from the EvoTouch controller.

The HoneywellEvoHome Custom Scheduler has two actions:

Actions

- A "**Cleanup**" action is available to manually remove any special events that have expired.

Note: *The "Cleanup Special Events" property, which is enabled by default, will automatically remove expired special events on the day following the expiration of a special event.*

- A "**Save Schedule in Default List**" action is available to copy the schedule into the "Default Schedules" folder of the HoneywellEvoHomeNetwork component.

See "Schedule Changes" and "Managing Default Schedules" in the NiagaraAX EvoHome Use Case section for more details.

The EvoHome Schedule Export Manager

The Honeywell EvoHome Schedule Export Manager (Figure 3-8) is the default view for the Export Schedules. Export Schedules is a frozen folder under an EvoHome Controller Device. The operation of this manager is similar to other "Schedule Export Managers" that would normally be found as the default view of a NiagaraAX Schedule component.

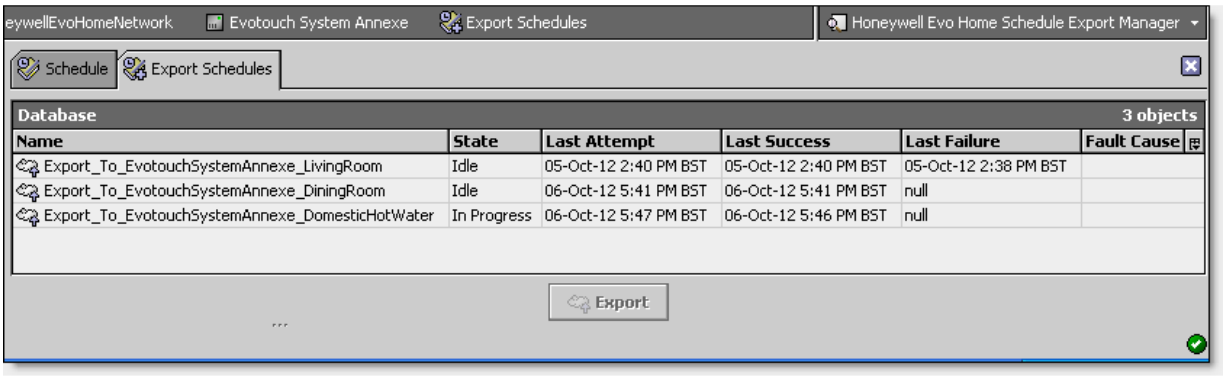


Figure 3-8: EvoHome Schedule Export Manager is the default view of the Export Scheduler

- **Name** is the export manager database name of the schedule to be exported.
- **State** The current State of the export manager component. For example 'Idle', 'Pending' or 'In Progress'.
- **Last Attempt** The time of the Last Attempted export of a schedule to this zone.
- **Last Success** The time of the Last Successful export of a schedule to this zone.
- **Last Failure** The time of the Last Failed export of a schedule to this zone.
- **Fault Cause** The reason of the last failed export of a schedule to this zone.

Note: *You can export the schedule manually by clicking the "Export" button on the Custom Scheduler or by pressing the "Export" button in the Schedule Export Manager.*

Note: *Exporting a DHW schedule operates in a similar manner to the Room Zone schedule.*

The EvoHome Schedule Import Manager

The Honeywell EvoHome Schedule Import Manager (Figure 3-9) is an optional view of Export Schedules. Export Schedules is a frozen folder under an EvoHome Controller Device. The operation of this manager is similar to the 'EvoHome Schedule Export Manager'.

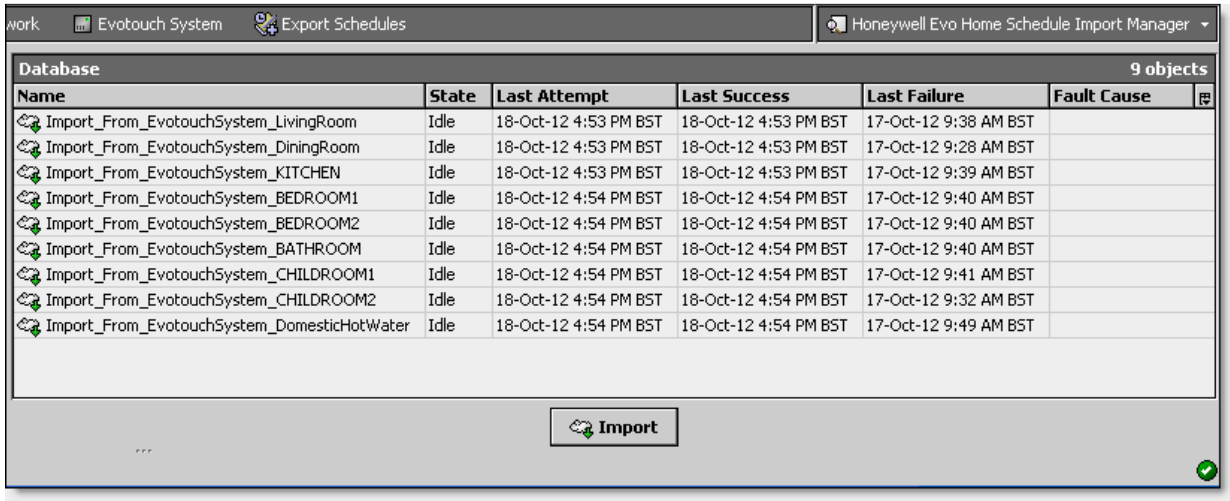


Figure 3-9: EvoHome Schedule Import Manager is an optional view of Export Schedules

- **Name** is the import manager database name of the schedule to be imported.
- **State** The current State of the import manager component. For example 'Idle', 'Pending' or 'In Progress'.
- **Last Attempt** The time of the Last Attempted import of a schedule to this zone.
- **Last Success** The time of the Last Successful import of a schedule to this zone.
- **Last Failure** The time of the Last Failed import of a schedule to this zone.
- **Fault Cause** The reason of the last failed import of a schedule to this zone.

Note: *You can import the schedule manually by clicking the "Import" button on the Custom Scheduler or by pressing the "Import" button in the Schedule Import Manager.*

Note: *Importing a DHW schedule operates in a similar manner to the Room Zone schedule.*

About Schedule Range Checking

The visual layout of the schedules is different when seen in the controller to that displayed in the 'Scheduler View' of the NiagaraAX component.

See "About EvoHome Schedules" in the NiagaraAX EvoHome Concepts section for more details

This section describes the range checking that the EvoHome driver performs before exporting any schedule to the controller. There are two range checks:

- There cannot be more than 42 periods
- There must be at least one period per day

The driver will maintain these two checks when preparing a schedule for export and this may result in the user being presented with an "Invalid Schedule" Schedule Error exception dialogue as can be seen in the example illustrated in Figure 3-10. In this example showing a DHW schedule, each day has 6 periods and one extra period is attempted on Wednesday (10:00 – 11:00). This would create 43 periods and the driver protects by declining the export.

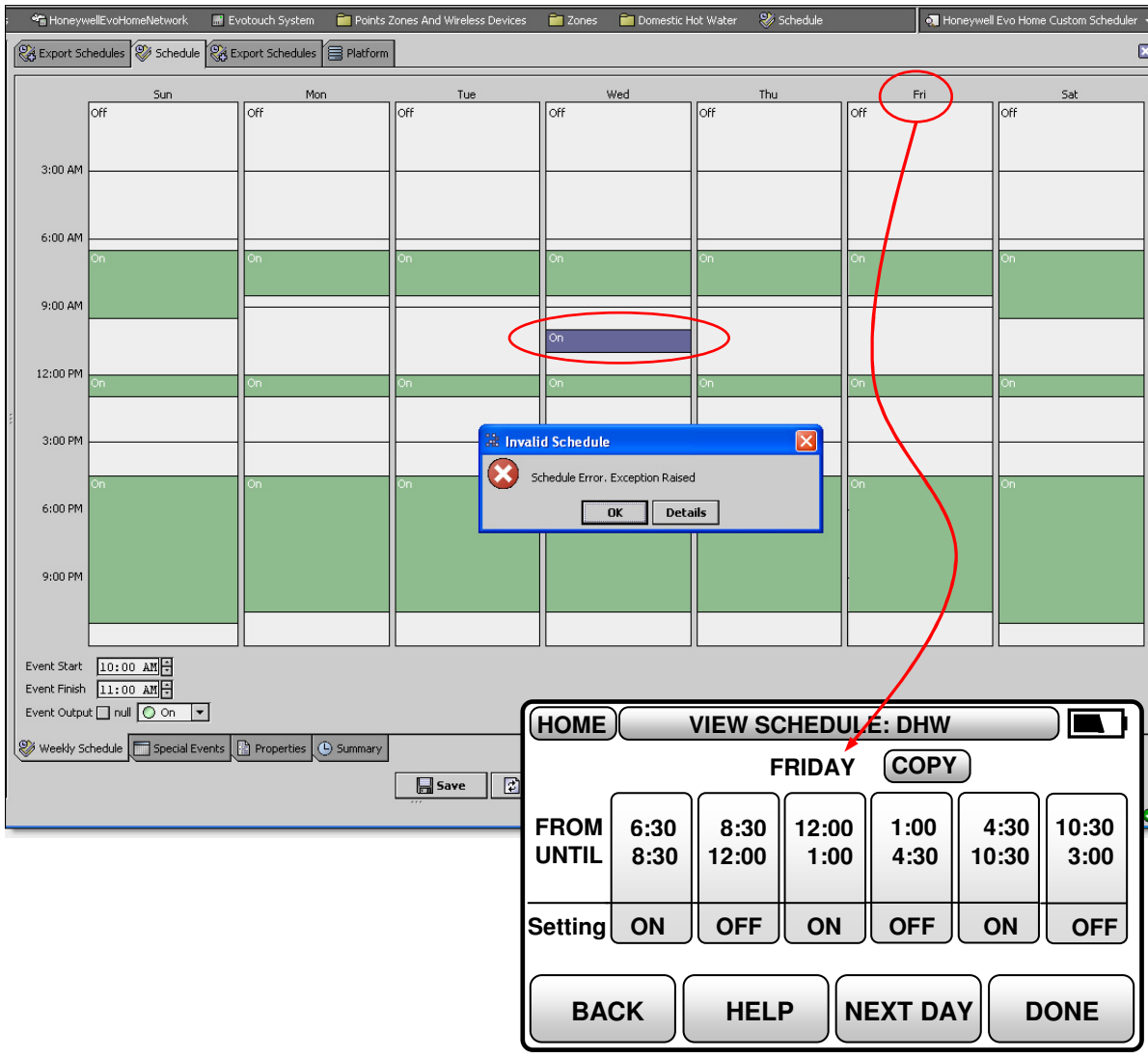
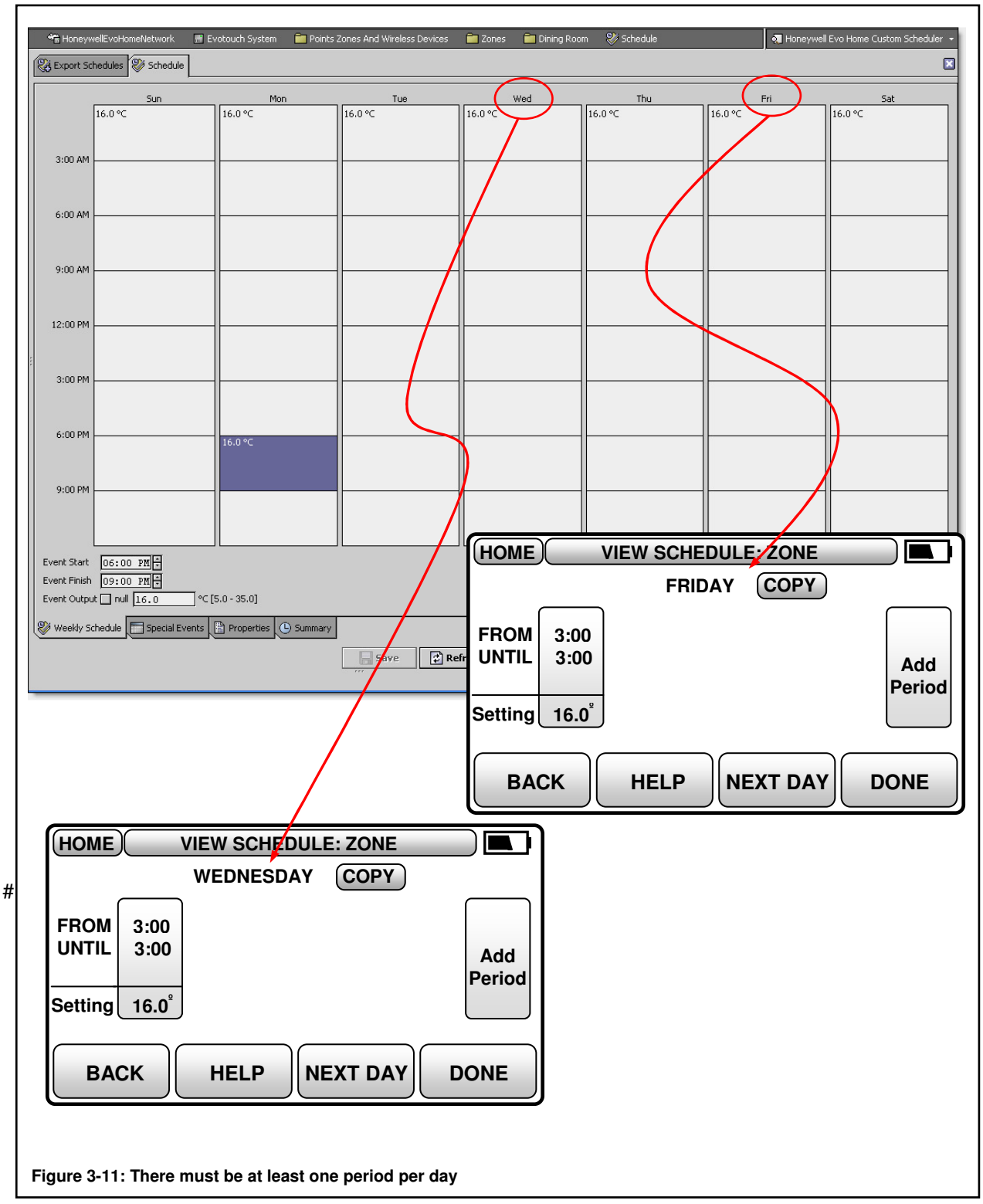


Figure 3-10: Invalid Schedule - There cannot be more than 42 periods

In the example illustrated in Figure 3-11, the user is attempting to export a schedule which does not have any switching points, just a default 16'C for the whole duration of the week. When exporting the schedule, the driver ensures that at least one period is exported per day and the inset illustrates how the schedule is subsequently displayed in the controller.



#

Figure 3-11: There must be at least one period per day

Finally in the example illustrated in Figure 3-12, the user has created more than six periods in one day thereby exceeding the range of the zone schedule user interface in the controller. However, there are less than 42 periods in the week and the driver will export the schedule. Note that the controller zone schedule user interface shows the first 6 periods on Wednesday but it is important to note that the remaining undisplayed periods are stored in the controller and when the schedule is imported into the station, the periods are still present.

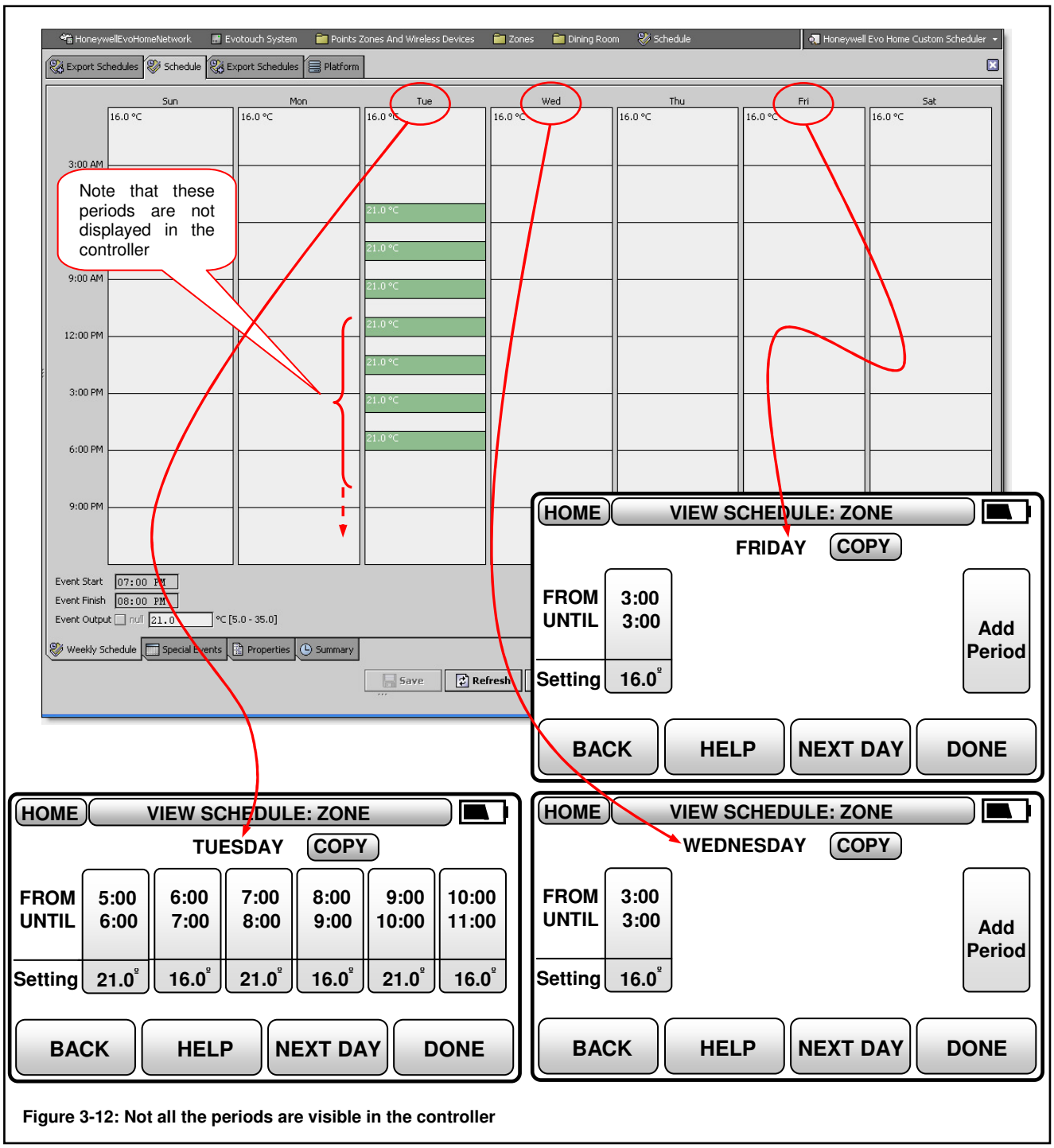


Figure 3-12: Not all the periods are visible in the controller

About EvoHome Fault Logbook

The EvoTouch controller has a "Fault Logbook" which contains a record of the last 64 "Faults" recorded by the controller. The Fault Logbook records each fault as a new entry which may be in either a "FAULT" or "RESTORE" condition. Figure 3-13 illustrates an example of the Fault Logbook in the controller.

FAULT LOGBOOK (at the EvoTouch controller)
Four events are displayed on this page:

Two Comms Faults (Study AMB SENS and SETPOINT)
A FAULT (Kitchen AMB SENS) which has later been RESTORED (Kitchen AMB SENS)

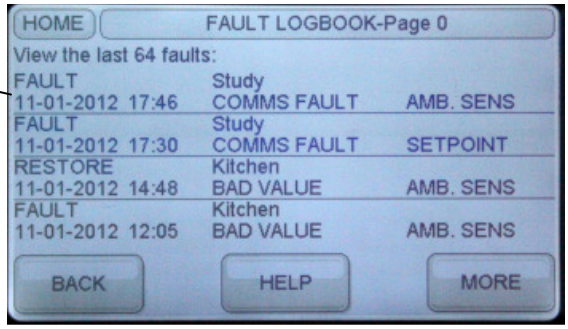


Figure 3-13: The EvoTouch controller Fault Logbook

All the Fault Logbook records are copied into the NiagaraAX station when the driver initially starts its communications with the controller. When the Fault Logbook is changed by a new record entry, the station is updated as part of the driver's regular interrogation and polling process. The Fault Logbook records are stored as NiagaraAX alarms in the station's Alarm Database and are all derived from the 'Fault Logbook' source. They can be viewed in the normal way via the Alarm DB View or an Alarm Console in the Alarm Service.

Note: *When it is entered into the station's alarm database, the NiagaraAX 'Timestamp' inherits the original "FAULT" time/date of the event in the Fault Logbook. By extension, the event's NiagaraAX 'Normal Time similarly inherits the original "RESTORE" time/date of the event in the Fault Logbook. Therefore: Timestamp=FAULT time/date and Normal Time=RESTORE time/date.*

Note: *When it is entered into the station's alarm database, the NiagaraAX 'Fault Cause' inherits the original "FAULT CAUSE" of the event in the Fault Logbook.*

Note: *When it is entered into the station's alarm database, the NiagaraAX 'Source Name (device reference)' is derived partly from the data it receives from the Fault Logbook. The 'Zone Name' segment of the source is derived from the zone name in the driver based upon a 'zone Index' reference of the event in the Fault Logbook.*

When it receives a Fault Logbook record, the driver checks from the record parameters whether it has been received before. If this is the case then the record is not added to the Alarm database because it would create a duplicate entry. If you wish to rebuild the alarm database from the Fault Logbook then you should execute the **Synchronise All Fault Logs** action on the EvoHome Network (to synchronise all systems).

Figure 3-14 illustrates an example of a Fault Logbook entry in the NiagaraAX Alarm Database:

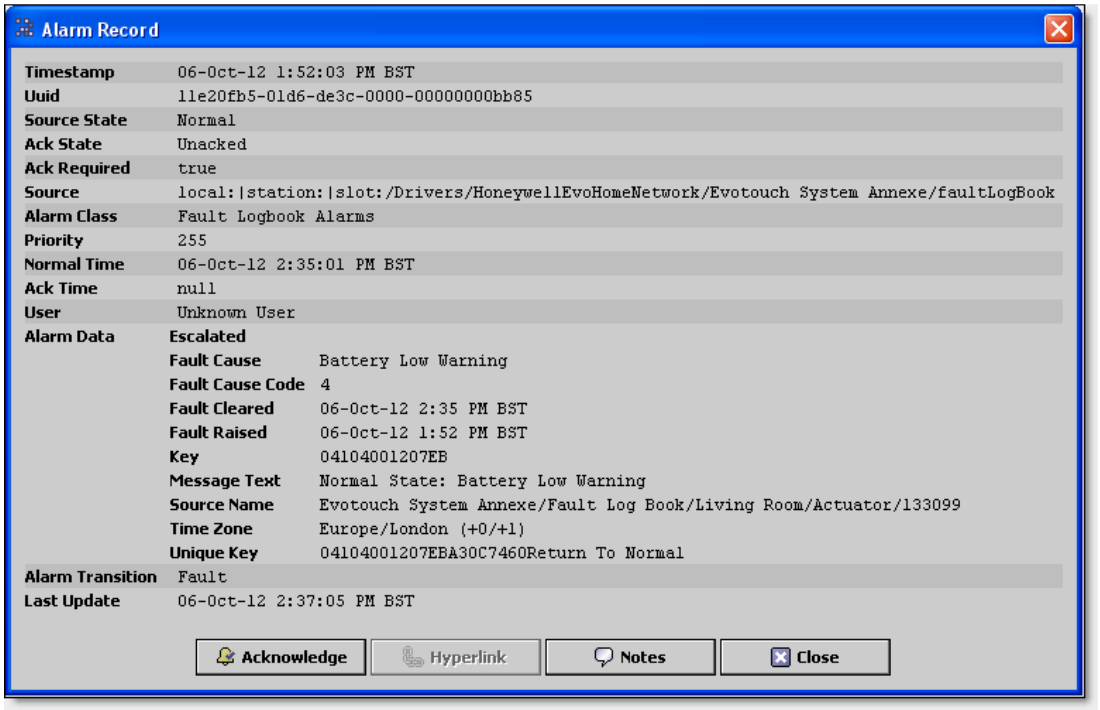


Figure 3-14: EvoTouch controller Fault Logbook Alarm in the NiagaraAX Alarm Database

About Alarm Source Info

As in other driver networks, the Honeywell EvoHome Driver has an available “Alarm Source Info” container slot in several components in the Network. You can use the ‘Alarm Source Info’ to differentiate alarms from different types of component alarms in the station. See “About Alarm Source Info” in the Drivers Guide for more details.

The Alarm Source Info container is available in the following components of the driver:

- Honeywell EvoHome Network
- Serial Interface
- EvoTouch Controller
- Fault Log Book
- All Proxy Points on Wireless Devices
- Room Zone Setpoint point
- Room Zone Temperature point
- Room Zone Lower Setpoint Limit point
- Room Zone Upper Setpoint Limit point
- DHW Zone Temperature
- EvoTouch Controller Outdoor Temperature

Figure 3-15 illustrates an example of the Alarm Source Info container:

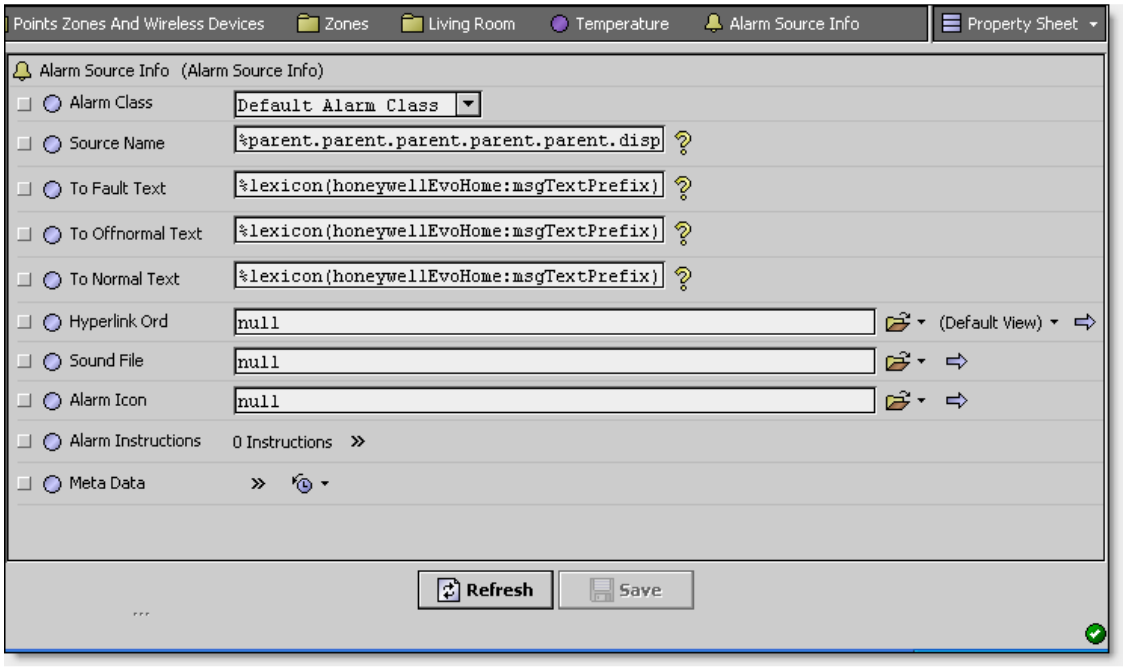


Figure 3-15: Alarm Source Info

- **Alarm Class** is the Alarm Class that alarms from this component are routed. The default is the ‘Default’ Alarm Class

- **Source Name** The Source Name that will accompany an alarm from this component. The default is, for example :

  %parent.parent.parent.parent.parent.displayName%/%parent.parent.displayName%/%parent.displayName%

- **To Fault Text** The Text that will accompany a Fault condition of an alarm from this component. The default is, for example :
  %lexicon(honeywellEvoHome:msgTextPrefix)% %proxyExt.currentStatus%

Note: *You can edit the Lexicon to change the prefix on any of these texts as illustrated in the example in Figure 3-16*

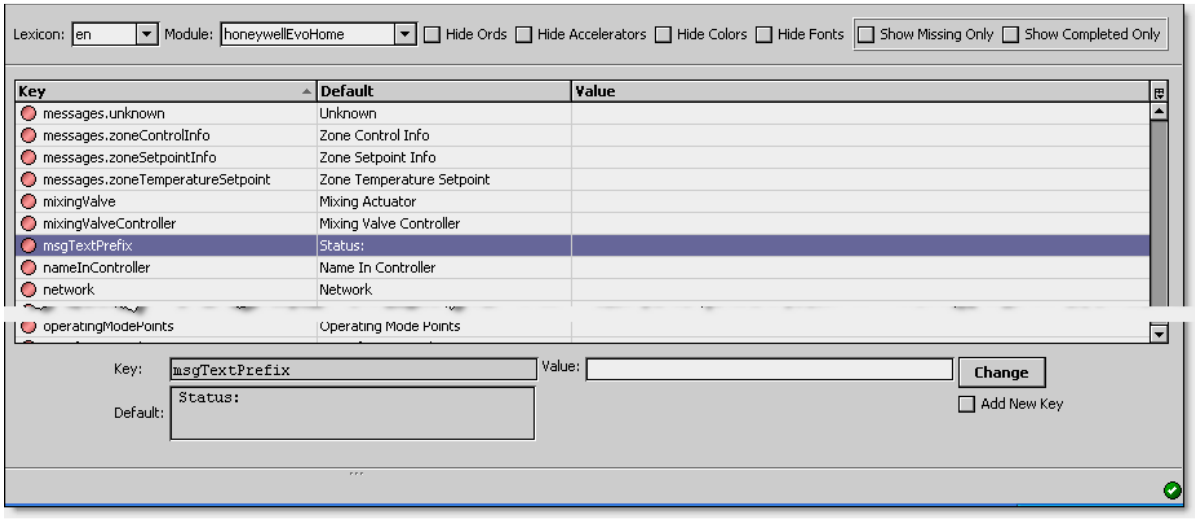


Figure 3-16: Lexicon Editor 'Prefix' Example

- **To Offnormal Text** The Text that will accompany an Off Normal condition of an alarm from this component. The default is, for example :
  %lexicon(honeywellEvoHome:msgTextPrefix)% %proxyExt.currentStatus%

- **To Normal Text** The Text that will accompany a Normal condition of an alarm from this component. The default is, for example :
  %lexicon(honeywellEvoHome:msgTextPrefix)% %proxyExt.currentStatus%

About Last Update Time

The 'Last Update Time' property of an Evo Home Proxy Ext is a driver specific extension to the standard NiagaraAX Proxy Point. Its intention is to display the time that the proxy point was last updated from the remote RF device which may be an EvoTouch controller (NiagaraAX Device) or one of the peripheral Wireless Devices. Figure 3-17 illustrates one example where the Proxy Ext of the 'Setpoint Command - Current Setpoint' is displaying a valid Last Update Time. The data for the Current Mode, Current Setpoint, …thru to Current Year proxy points is requested by the driver immediately following a 'Setpoint Command' action. When the EvoTouch controller responds to this request the new conditions are reflected in the proxy points and the 'Last Update Time' is similarly updated.

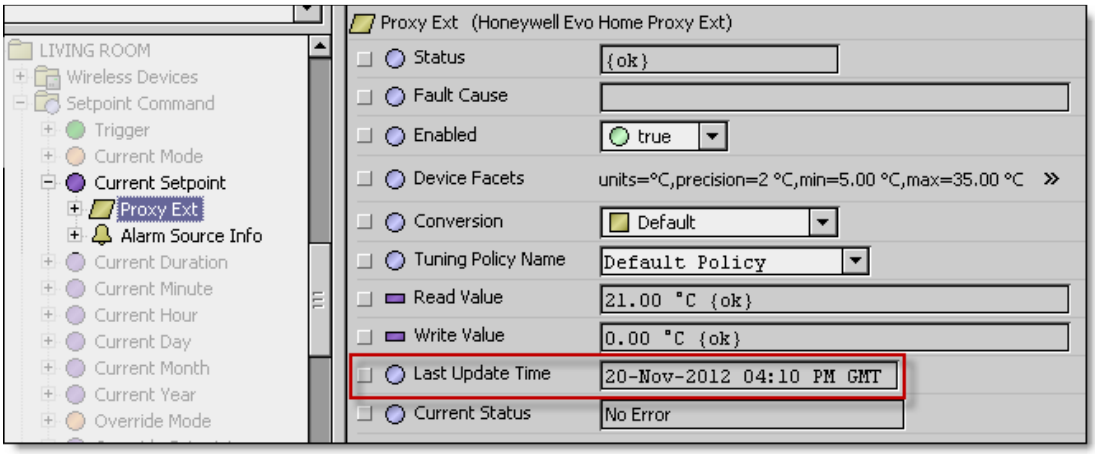


Figure 3-17: Last Update Time – Current Setpoint

Some of the 'Last Update Time' properties of Proxy Extensions are not updated immediately even though an 'Action' has been made to change the data value. Figure 3-18 illustrates the example of a Proxy Ext of the 'Window Function' point. Although there is a point 'Action' to change the condition, the driver cannot request from the EvoHome controller the current state of this type of point and consequently the 'Last Update Time' remains out of date. The driver relies on the controller sending an unsolicited message to inform the driver of the current state. Note also that in this point the 'Read Value' and 'Write Value' properties are updated by the driver as a 'simulation' based upon the confidence that the 'Action' was initiated by the communications system and an acknowledgement was received from the controller to confirm that the message was received satisfactory. We rely and hope that the controller has made the appropriate changes from its received message but until the controller's unsolicited message is received by the driver, the 'Read' value remains a simulation and the 'Last Update Time' is old.

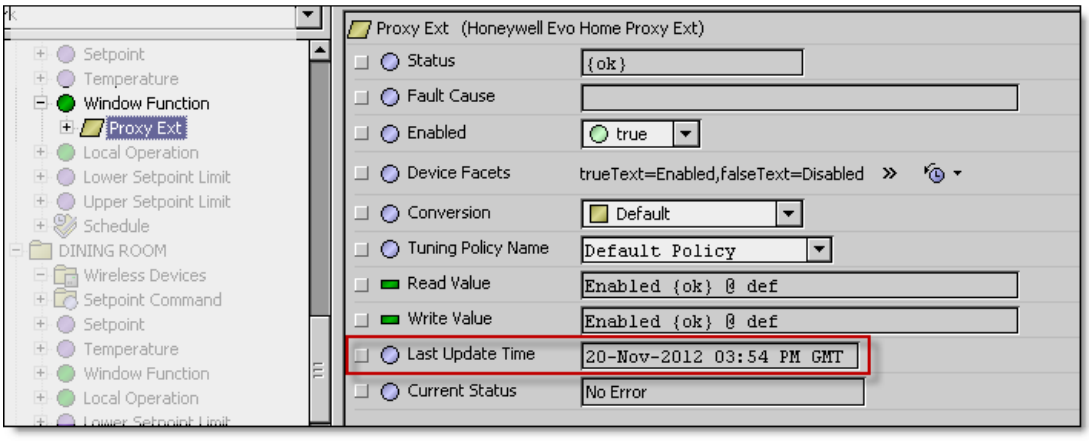


Figure 3-18: Last Update Time – Window Function

Some of the 'Last Update Time' properties of Proxy Extensions are never updated and they will remain in a 'null' condition forever. Figure 3-19 illustrates an example of a Proxy Ext of the 'Setpoint Command-Override Mode' point. These points are included in 'Setpoint Command' which is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX points in an 'easy-to-use' wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it. The 'Override Mode, Override Setpoint,...thru Override Until Year' proxy points do not reflect any point within the EvoTouch controller and are included only to provide a convenient 'normalised' NiagaraAX presentation. They cannot therefore offer any valid 'Last Update Time' value.

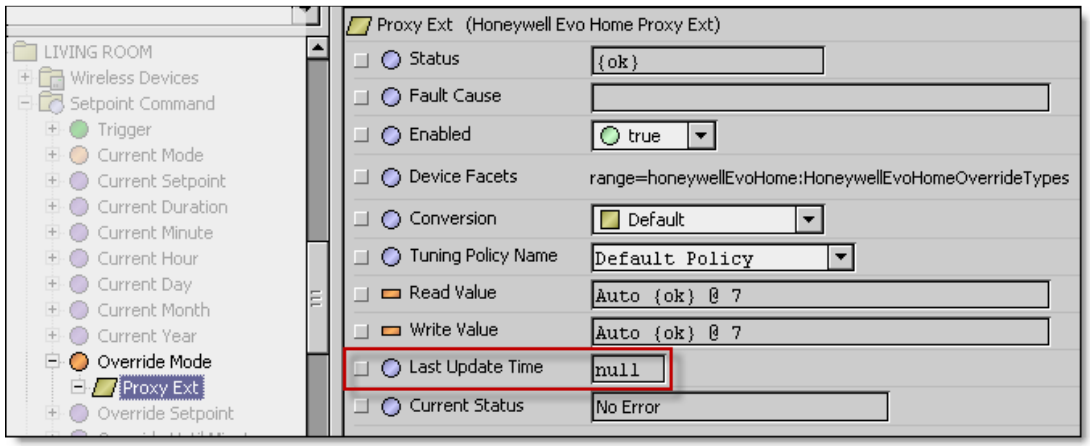


Figure 3-19: Last Update Time – Override Mode

Some of the 'Last Update Time' properties of Proxy Extensions are only updated at periods of 60(-0/+10) minutes as part of the request cycle of the Cyclic Controller. For more details, see "About the EvoHome Cyclic Controller" in the 'NiagaraAX EvoHome Concepts' section. The Outdoor Temperature and Password Mode points which reside at the EvoTouch system level of the network are typical examples and one is illustrated in Figure 3-20. This data value is not obtained by any unsolicited message from the EvoTouch controller but instead relies on a regular request by the driver.

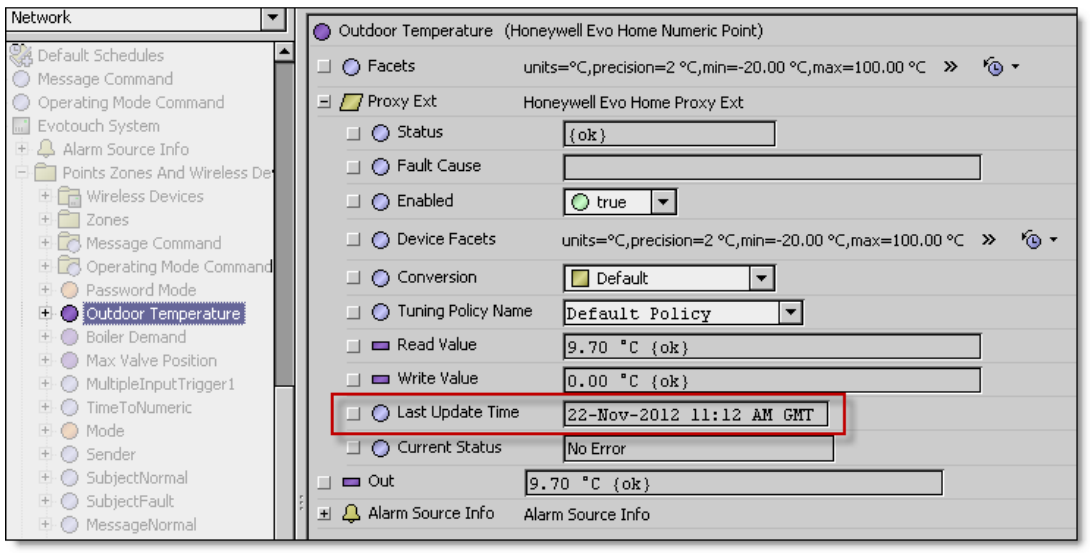


Figure 3-20: Last Update Time – Outdoor Temperature

Some of the 'Last Update Time' properties of Proxy Extensions rely completely upon the reception of unsolicited messages. This is non-deterministic RF communications and the time of the unsolicited message will depend upon the update and data transfer strategies within each device as well as the RF network traffic. The Radiator Controller is a Wireless Device and this example has a number of points under it which each have a 'Last Update Time' property. One example is illustrated in Figure 3-21.

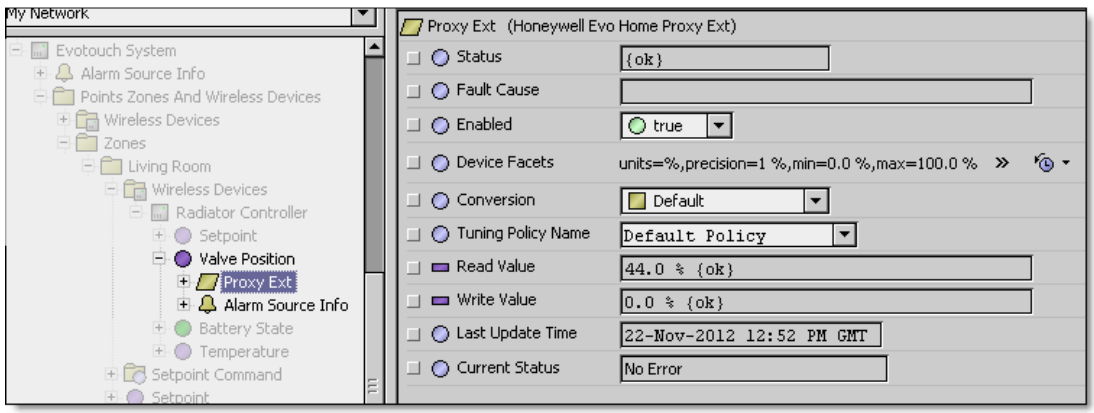


Figure 3-21: Last Update Time – Wireless Device Radiator Controller Valve Position

The driver does, however keep an active monitor on the 'Last Update Time' of every point in each Wireless Device in the network. When an update message is received from any of the points in the Wireless Device, a 180 minute timer is reset. Thus if no unsolicited message has been received from the Wireless Device for 180 minutes then the 'Status' property of all the points under it will go to a {down} condition. An example of this is illustrated in Figure 3-22. Note that if the 'Status' of the EvoTouch system is in a {down} condition then the status of every point under it including those of Wireless Devices will also be in a {down} condition. This is normal behaviour of a NiagaraAX 'Device' of which the EvoTouch system is one.

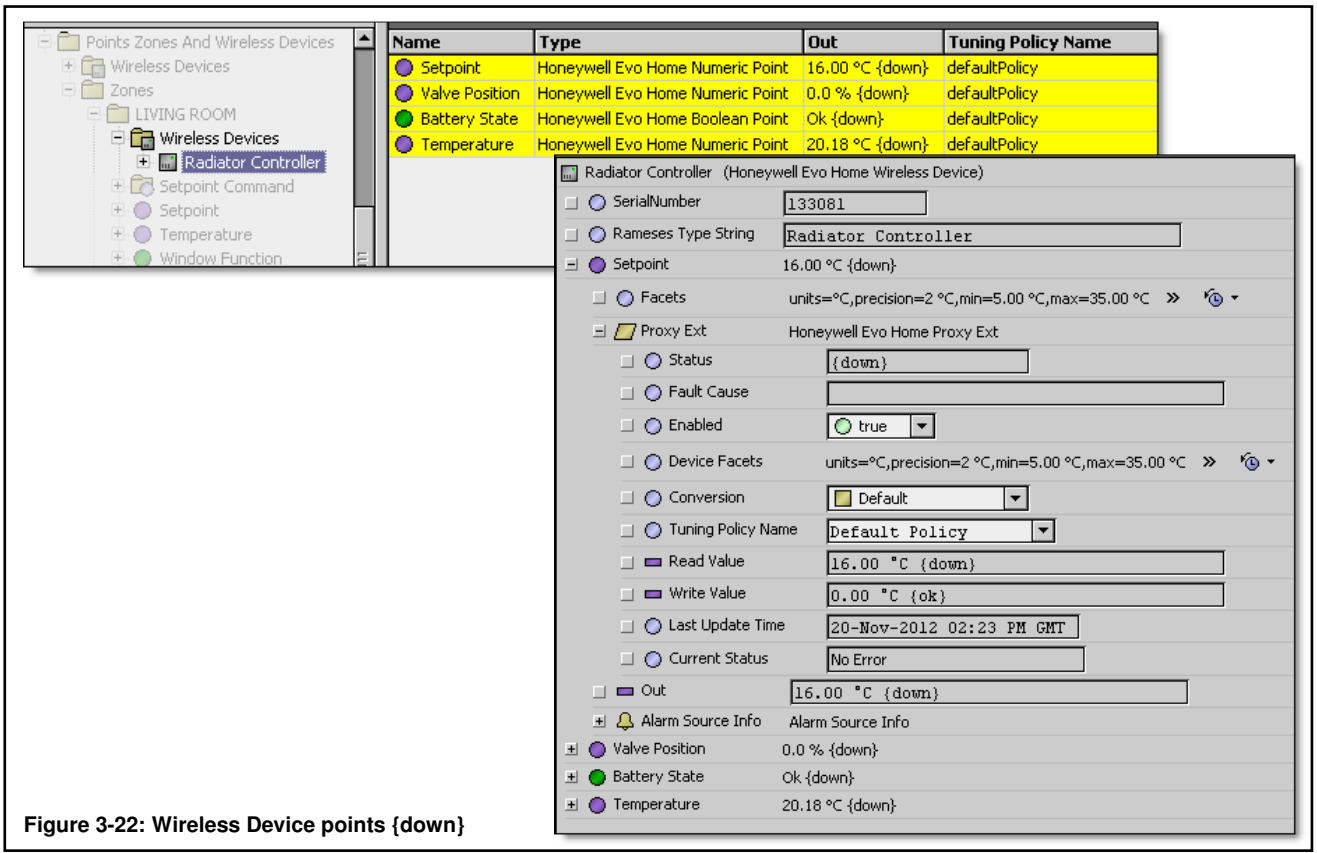


Figure 3-22: Wireless Device points {down}

Hierarchy Examples

Figures 3-23, 3-24, 3-25, 3.26 and 3-27 illustrate some hierarchy examples:

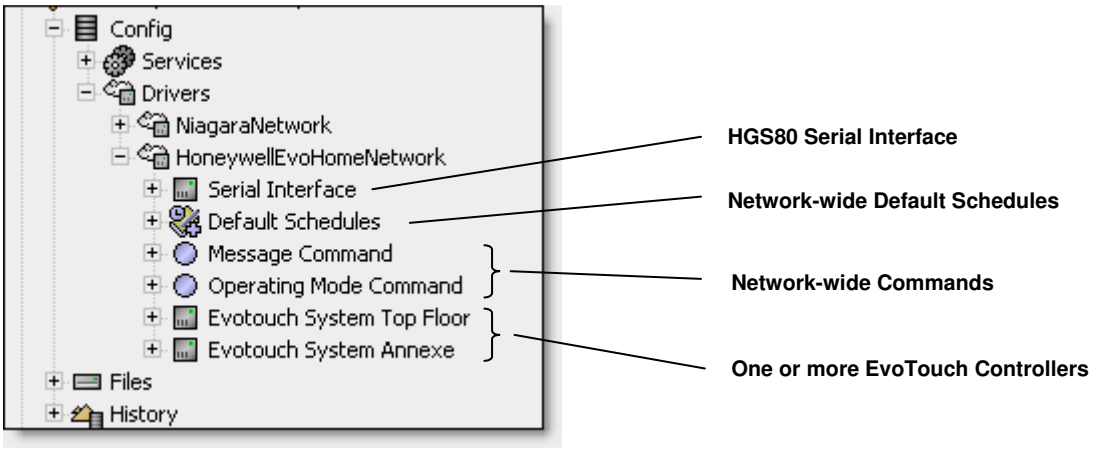


Figure 3-23: EvoHome Network

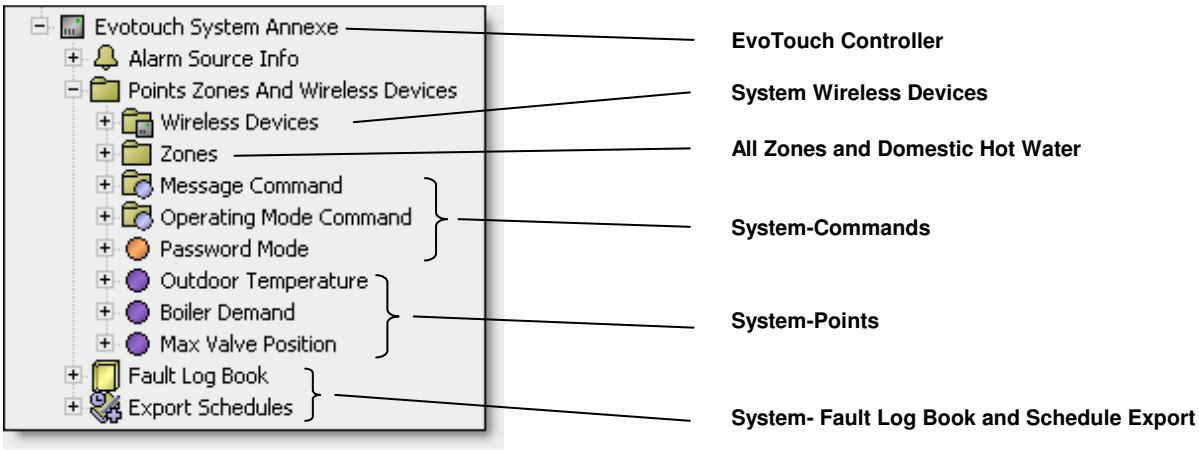


Figure 3-24: EvoTouch System

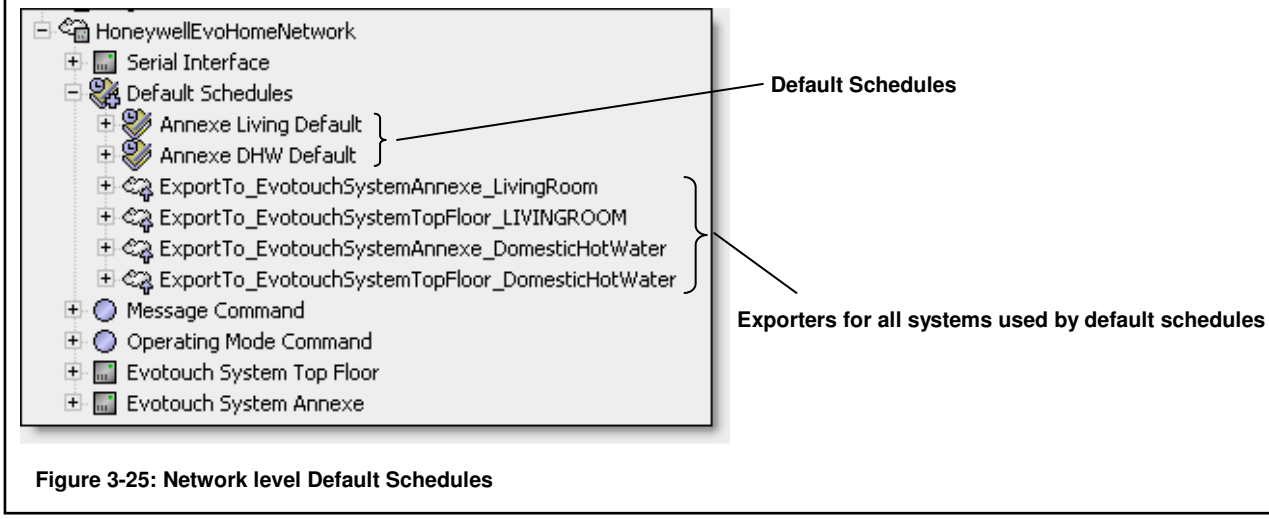


Figure 3-25: Network level Default Schedules

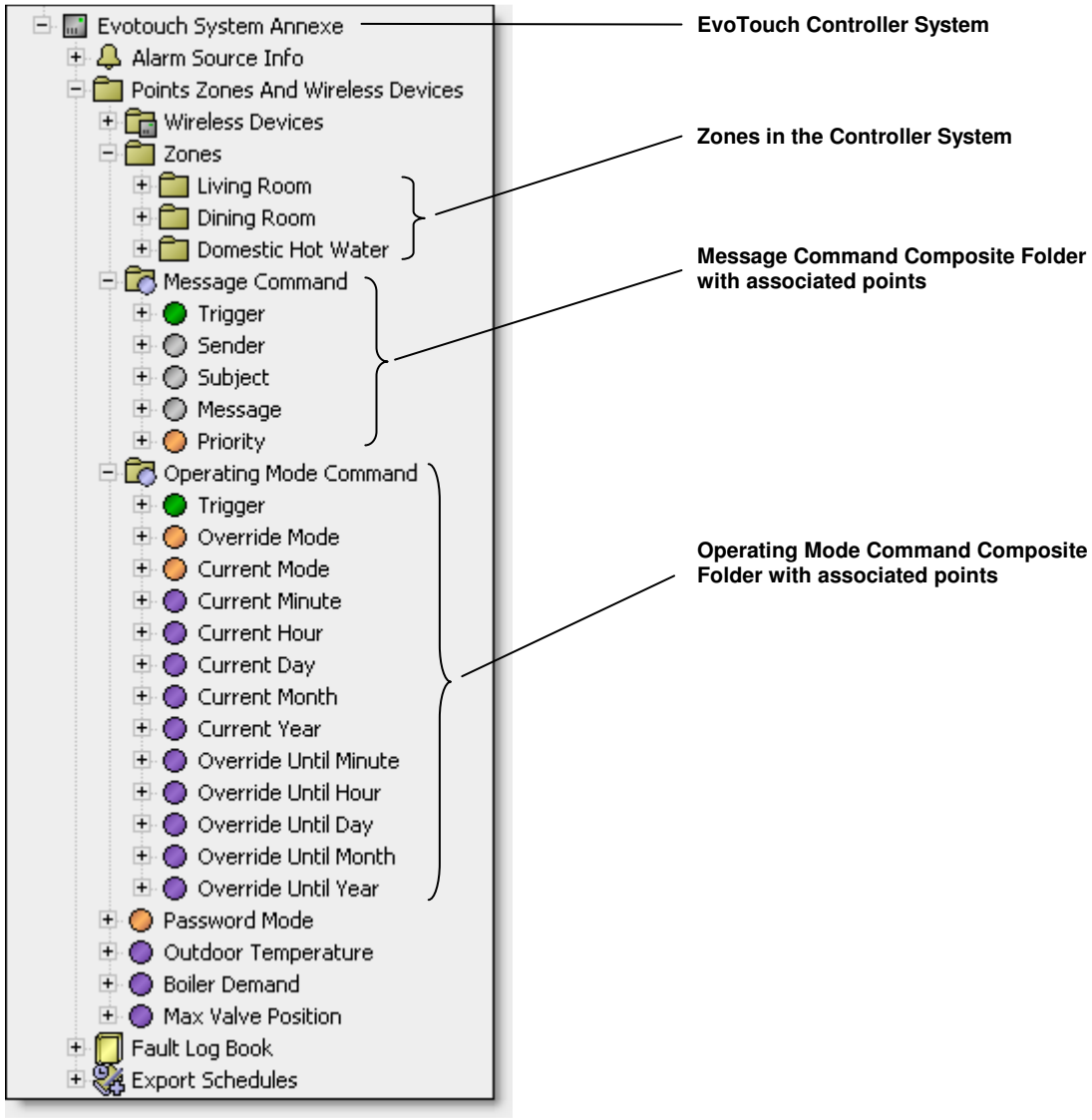


Figure 3-26: EvoTouch Controller System

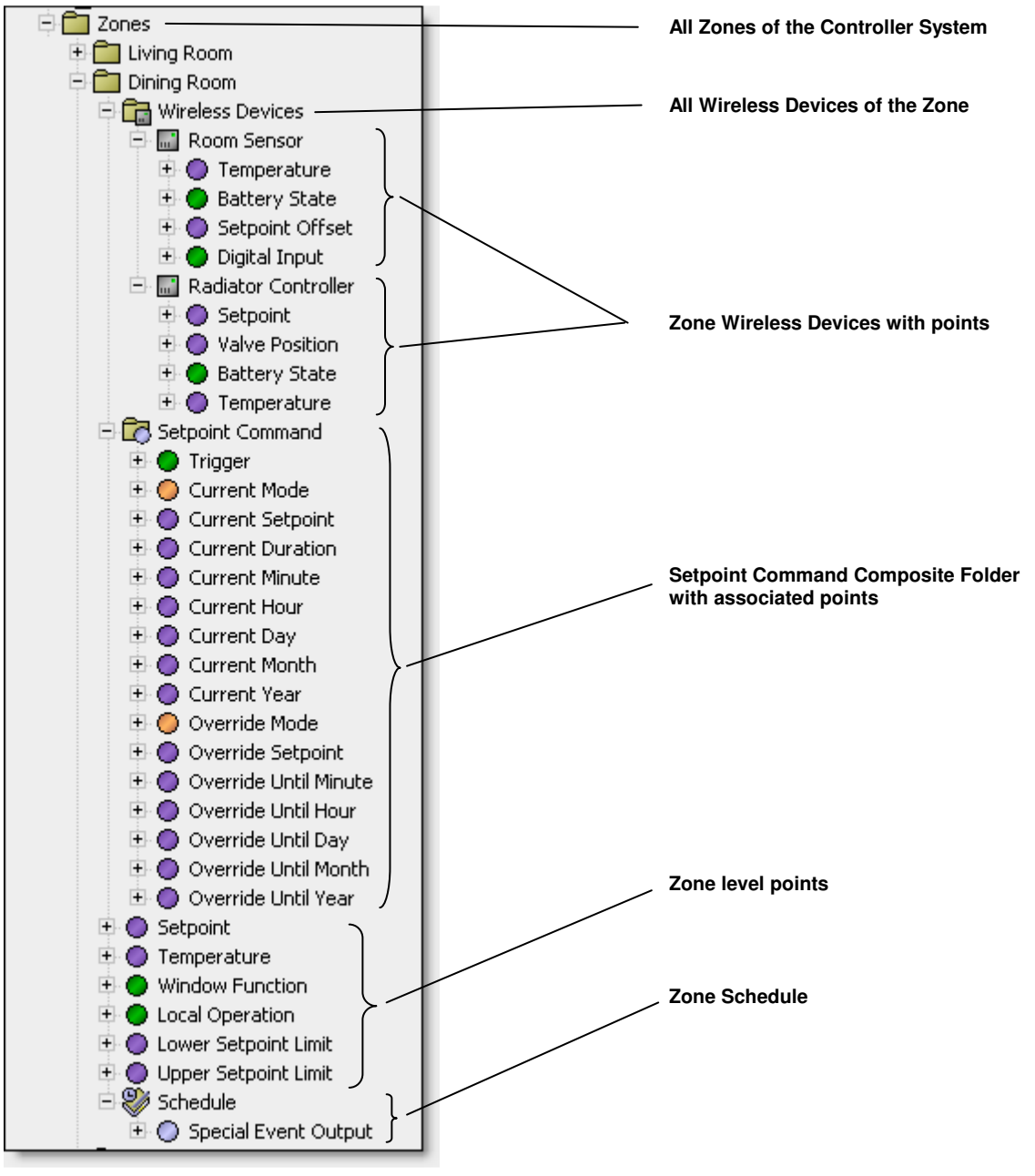


Figure 3-27: EvoTouch Controller Zone

Use Cases

Use Cases are included in this guide to give some examples of typical applications.

Use Cases Summary

Here are a number of Use Case examples:

- Sending a Message
- Special Events
- Setpoint Override
- Operating Mode Command
- Schedule Changes
- Managing Default Schedules
- Discovery Outcome Investigation

Sending a Message

The EvoTouch controller can receive a number of text messages which are viewed by the user from menus in the controller. There are several ways to initiate a message to one or all EvoTouch controller systems from the driver:

- As a NiagaraAX Point or Composite folder manual 'Action'
- Via the Wire sheet control strategy

Sending a Message to one or all EvoTouch controllers is done by using the 'Message Command' component which is automatically created by the driver when the EvoTouch system is installed into the driver. 'Message Command' is available at two levels in the driver. At Network level where the message command can be used to send a common message to all EvoHome Systems and at System level where the message is only sent to a single specific system.

This use case describes a wire sheet control strategy of the Message Command at System level and is illustrated in Figure 4-1. (The wire sheet at Network level is similar)

'Message Command' is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX points in an 'easy-to-use' wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

The MultipleInputTrigger component (available in the honeywellEvoHome palette) fires a StatusBoolean output (Trigger) edge from False to True, after a preset delay of default 1second if any of its inputs that comprise StatusEnum, StatusNumeric, StatusString or StatusBoolean change their state or value. This is used to fire the Trigger input of the Message Command Composite when any change of input from the 'Priority', 'Sender', Subject' or 'Message' occurs. The default delay of the MultipleInputTrigger component can be lengthened if desired to allow time for the inputs to be changed before it sends the message.

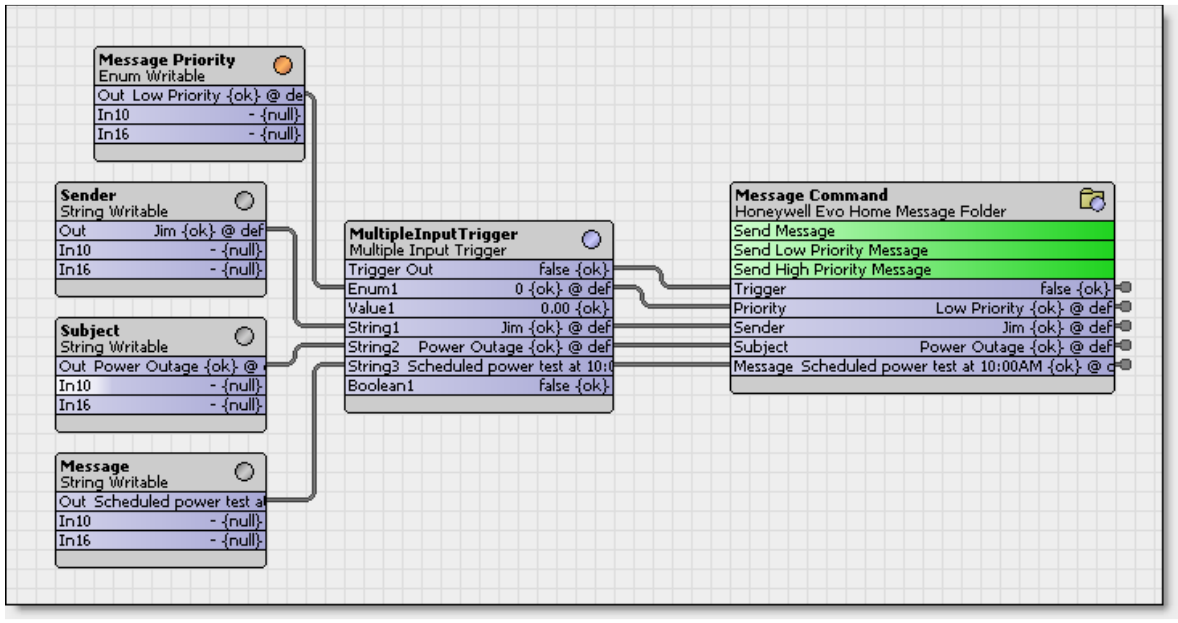


Figure 4-1: System Message Command from Wire Sheet

Please be aware that if the individual points are also actioned or controlled as well as through the composite point then the behaviour may not be as desired because the composite links to the In7 slots. This can also occur if the actions on the composite folder itself are used.

Special Events

'Special Events' is a feature of all NiagaraAX schedules which when added and configured can be used to override the current temperature setpoint of a room zone or the on-off state of domestic hot water in the EvoTouch controller.

This use case describes a wire sheet control strategy to enable a 'Special Event' of the room zone schedule to override the setpoint of the same room zone when the event is active. It is illustrated in Figure 4-2. (The wire sheet of the Domestic Hot Water zone is similar).

The wire sheet configuration described in this use case links the special event of the schedule in a zone to the same zone's setpoint override function. The strategy can be extended to control other zone setpoints from the same schedule using standard NiagaraAX component linking. Note that this strategy operates regardless of where the times, properties and special event data of the schedule has been derived be it from the zone schedule itself, or from a default schedule which may in turn have been derived from a supervisor station. The special event data is transferred along with all the other schedule time data from whatever source into the zone schedule and its output is linked to the setpoint command in the wire sheet.

'Setpoint Command' is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX points in an 'easy-to-use' wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

The Special Event Output component is also automatically created by the driver during the installation of the EvoTouch controller into the driver. It is visible in the Wire Sheet view of every zone which also includes the Setpoint Command folder.

Whilst the Special Event is active, the Setpoint is overridden with a 'Permanent Override' mode condition. When the event has expired, the override mode is set to 'Auto'.

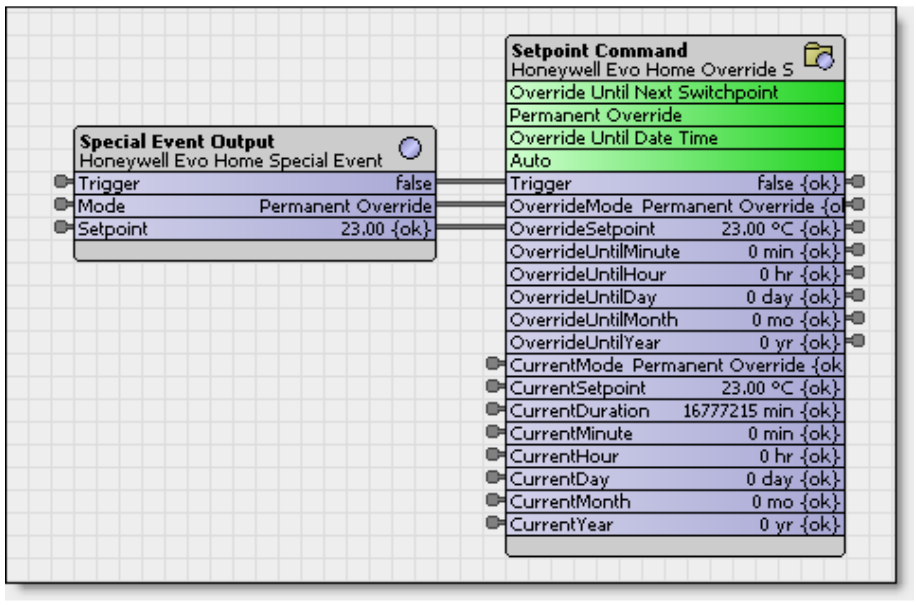


Figure 4-2: Special Event and Setpoint Command on the Wire Sheet

Please be aware that if the individual points of the Setpoint Command are also actioned or controlled as well as through the composite point then the behaviour may not be as desired because the composite links to the In7 slots. This can also occur if the actions on the composite folder itself are used.

Setpoint Override

The temperature setpoint of every room zone in the EvoTouch controller can be overridden by the driver. The override state (on or off) of the domestic hot water zone can also be overridden. The Setpoint override modes are “Override Until Next Switchpoint”, “Permanent Override”, “Override Until Date Time” and “Auto”.

This use case describes a wire sheet control strategy to override the temperature setpoint of a room zone. It is illustrated in Figure 4-3. (The wire sheet of the Domestic Hot Water zone is similar).

‘Setpoint Command’ is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX points in an ‘easy-to-use’ wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

The ‘TimeToNumeric’ component (available in the honeywellEvoHome palette) is an ‘easy-to-use’ wire sheet component that converts Date and Time [baja:AbsTime] into its [baja:StatusNumeric] parts (min, hr, day, mo, yr) for use with the ‘Setpoint Command’ component.

The MultipleInputTrigger component (available in the honeywellEvoHome palette) fires a StatusBoolean output (Trigger) edge from False to True, after a preset delay of default 1second if any of its inputs that comprise StatusEnum, StatusNumeric, StatusString or StatusBoolean change their state or value. This is used to fire the Trigger input of the Setpoint Command Composite when any change of input from the ‘Mode’, ‘Setpoint’, ‘Minute’, ‘Hour’, ‘Day’, ‘Month’ or ‘Year’ occurs. The default delay of the MultipleInputTrigger component can be lengthened if desired to allow time for the inputs to be changed before it triggers the Setpoint Command.

The ‘NumericToTime’ component (available in the honeywellEvoHome palette) is an ‘easy-to-use’ wire sheet component that converts Date and Time [baja:StatusNumeric] parts (min, hr, day, mo, yr) into [baja:AbsTime]. It is linked in this example for information only.

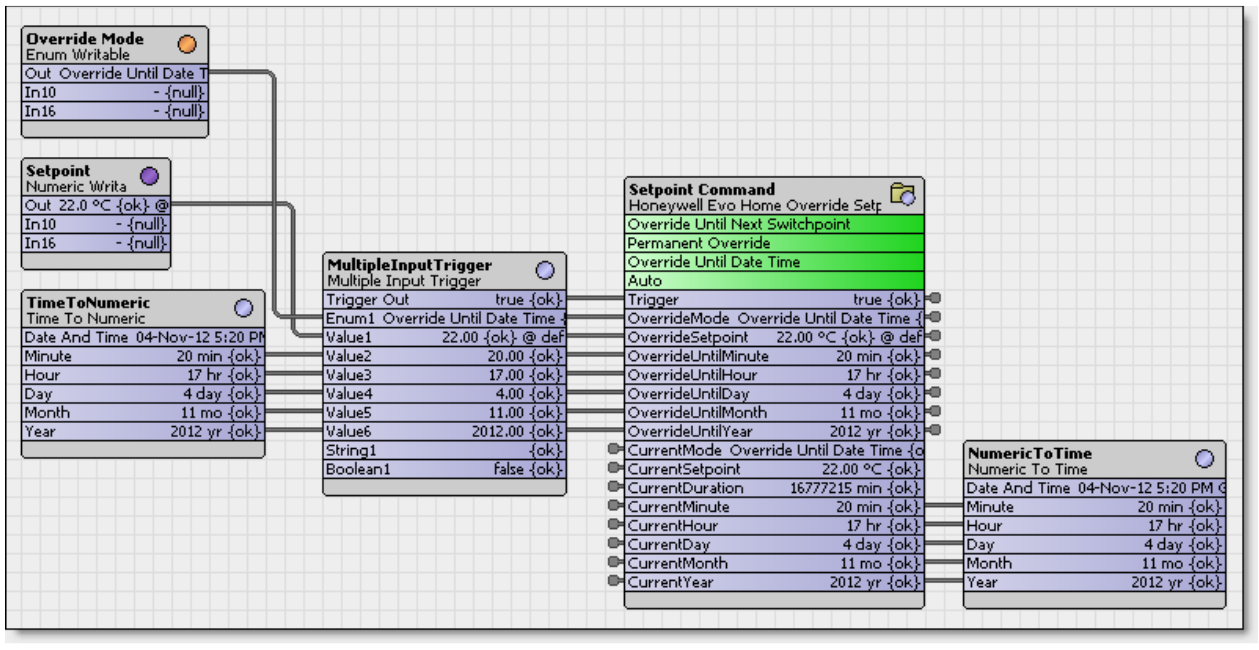


Figure 4-3: Setpoint Override on the Wire Sheet

Please be aware that if the individual points of the Setpoint Command are also actioned or controlled as well as through the composite point then the behaviour may not be as desired because the composite links to the In7 slots. This can also occur if the actions on the composite folder itself are used.

Operating Mode Command

The Operating Mode of each EvoTouch controller can be overridden by the driver. The Operating Mode States are; “Auto”, “Auto With Eco”, “Auto With Reset”, “Day Off Until Date”, “Day Off With Eco Until Date”, “Holiday Until Date Time” and “System Off”. Additionally, the Operating Mode of every EvoTouch controller can be overridden at once because the Operating Mode Command is available at both System level and Network level.

This use case describes a wire sheet control strategy to Command the Operating Mode of an EvoTouch controller system. It is illustrated in Figure 4-4. (The wire sheet at the Network level is similar).

‘Operating Mode Command’ is a NiagaraAX Composite Folder that exposes a selection of the slots of standard NiagaraAX points in an ‘easy-to-use’ wire sheet form. The composite folder is automatically created by the driver and it uses the In7 (@7) priority level slots of the individual points associated with it.

The ‘TimeToNumeric’ component (available in the honeywellEvoHome palette) is an ‘easy-to-use’ wire sheet component that converts Date and Time [baja:AbsTime] into its [baja:StatusNumeric] parts (min, hr, day, mo, yr) for use with the ‘Setpoint Command’ component.

The MultipleInputTrigger component (available in the honeywellEvoHome palette) fires a StatusBoolean output (Trigger) edge from False to True, after a preset delay of default 1second if any of its inputs that comprise StatusEnum, StatusNumeric, StatusString or StatusBoolean change their state or value. This is used to fire the Trigger input of the Setpoint Command Composite when any change of input from the ‘Mode’, ‘Setpoint’, ‘Minute’, ‘Hour’, ‘Day’, ‘Month’ or ‘Year’ occurs. The default delay of the MultipleInputTrigger component can be lengthened if desired to allow time for the inputs to be changed before it triggers the Setpoint Command.

The ‘NumericToTime’ component (available in the honeywellEvoHome palette) is an ‘easy-to-use’ wire sheet component that converts Date and Time [baja:StatusNumeric] parts (min, hr, day, mo, yr) into [baja:AbsTime]. It is linked in this example for information only.

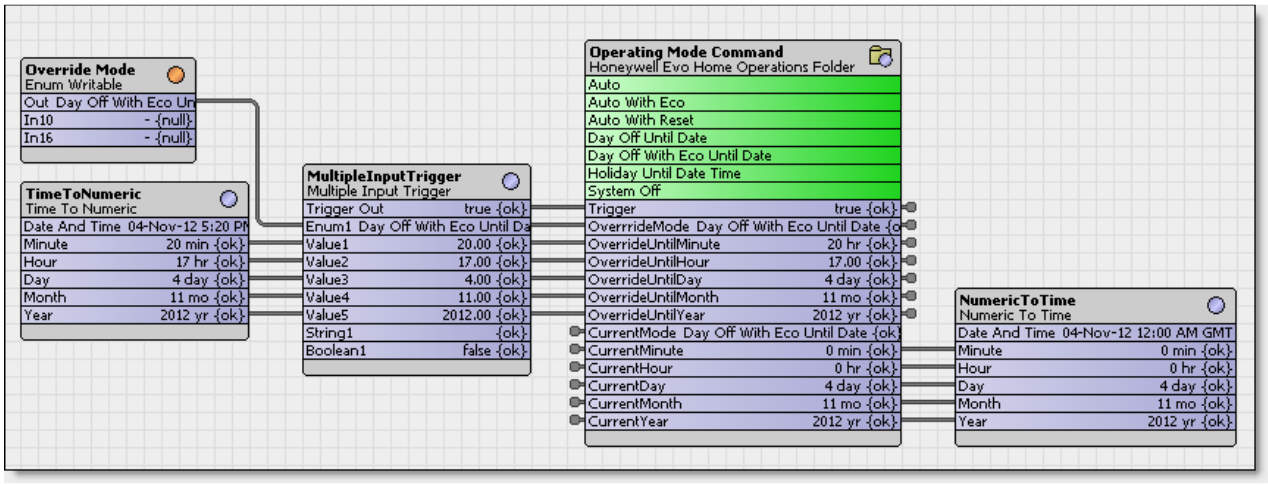


Figure 4-4: Operating Mode Command on the Wire Sheet

Please be aware that if the individual points of the Operating Mode Command are also actioned or controlled as well as through the composite point then the behaviour may not be as desired because the composite links to the In7 slots. This can also occur if the actions on the composite folder itself are used.

Schedule Changes

Each schedule of an EvoTouch controller is represented in the driver by a NiagaraAX schedule which is located in each room or DHW zone. If a change is made to the schedule by the user at the EvoTouch controller, the updated schedule is 'Imported' to the driver as part of the driver's regular checking cycle. If a change is needed to be made to the schedule in the EvoTouch, either manually one-off or by the 'default schedule' feature, the updated schedule in the driver is 'Exported' to the EvoTouch.

This use case describes an ad-hoc change made to a schedule in the driver and is illustrated in Figure 4-5.

A change is made to a Tuesday morning period of the schedule. The "Export" button on the schedule is clicked and the schedule is then exported to the EvoTouch.

For diagnostic use, each room and DHW zone's export manager component can be inspected and the illustration shows the corresponding 'Export' attempt in progress.

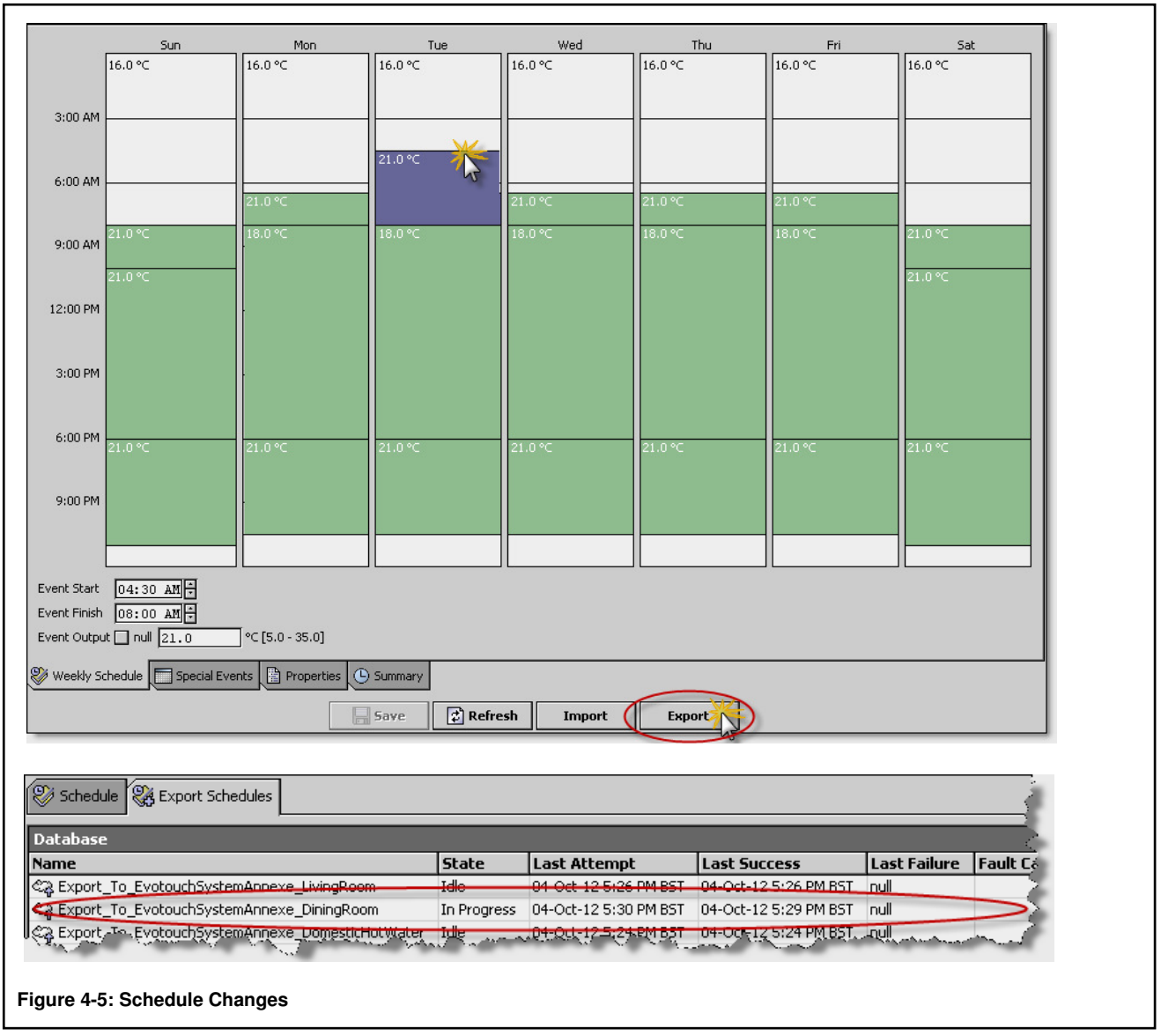


Figure 4-5: Schedule Changes

Managing Default Schedules

One of the features of the driver is to provide management for the export of 'Default' schedules to the EvoTouch controller. Default schedules are used to 'reset' the current schedule of the room and DHW zones in the EvoTouch controllers. This may be needed for example, to support 'occupied' or 'unoccupied' room operation, seasonal room configurations, or to reset the schedule for new occupation.

This use case describes how a 'current' schedule that is operating in one of the room zones of an EvoTouch controller can be selected as the 'source' for use as a default schedule and how it can then be configured for regular 'export' once a week, not only to reset all the room zones in the same controller but to reset the room zones of another controller as well. Finally this use case explores how a standard NiagaraAX 'numeric schedule' in a Supervisor station can be selected as a 'source' for use as the default schedule.

There are 3 steps to select and configure a default schedule and allocate it to zones within EvoTouch controllers and these are illustrated in Figure 4-6, Figure 4-7, and Figure 4-8:

- Step 1: Select Schedule
- Step 2: Select Zones
- Step 3: Configure Schedule to Zone

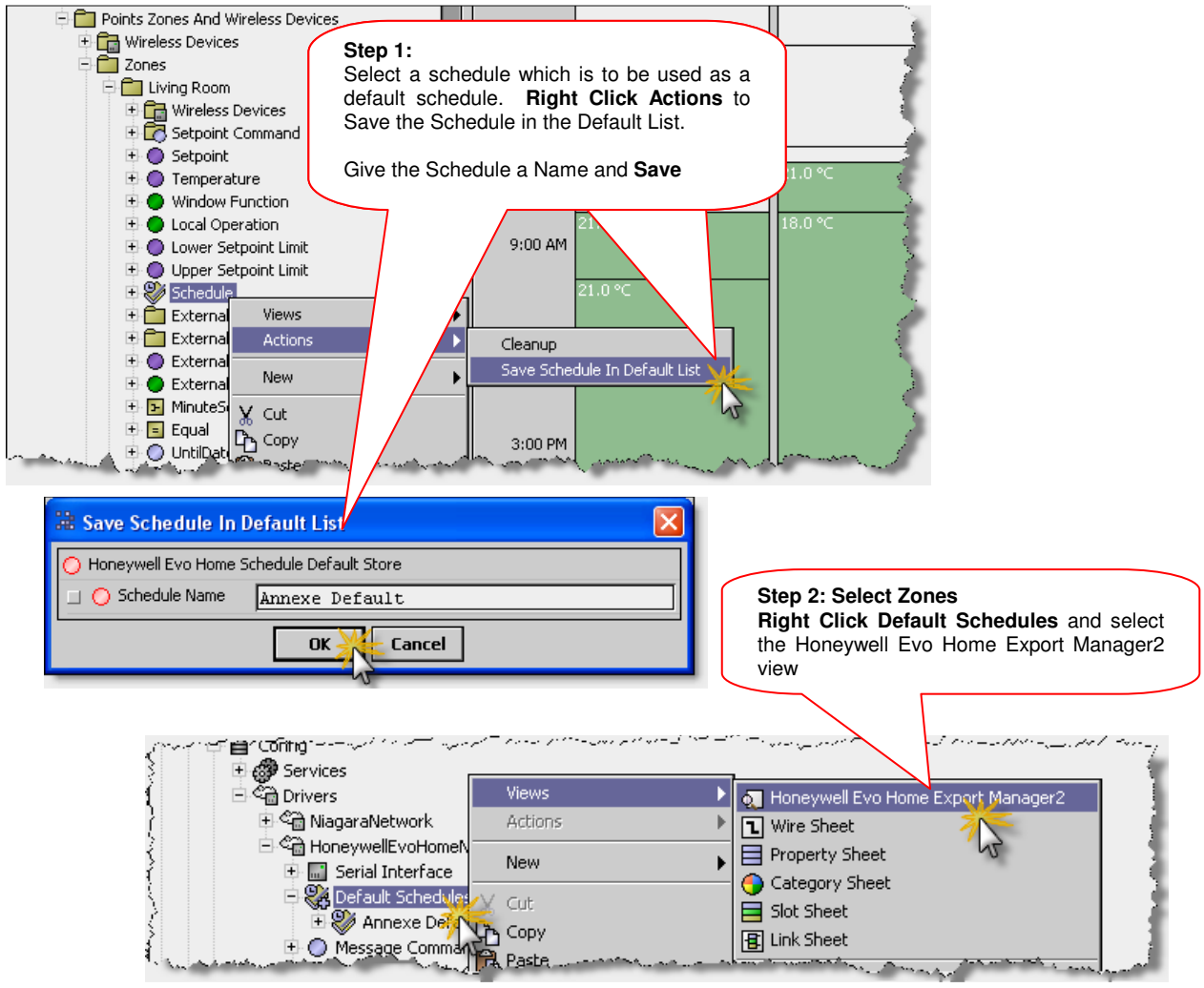


Figure 4-6: Default Schedules

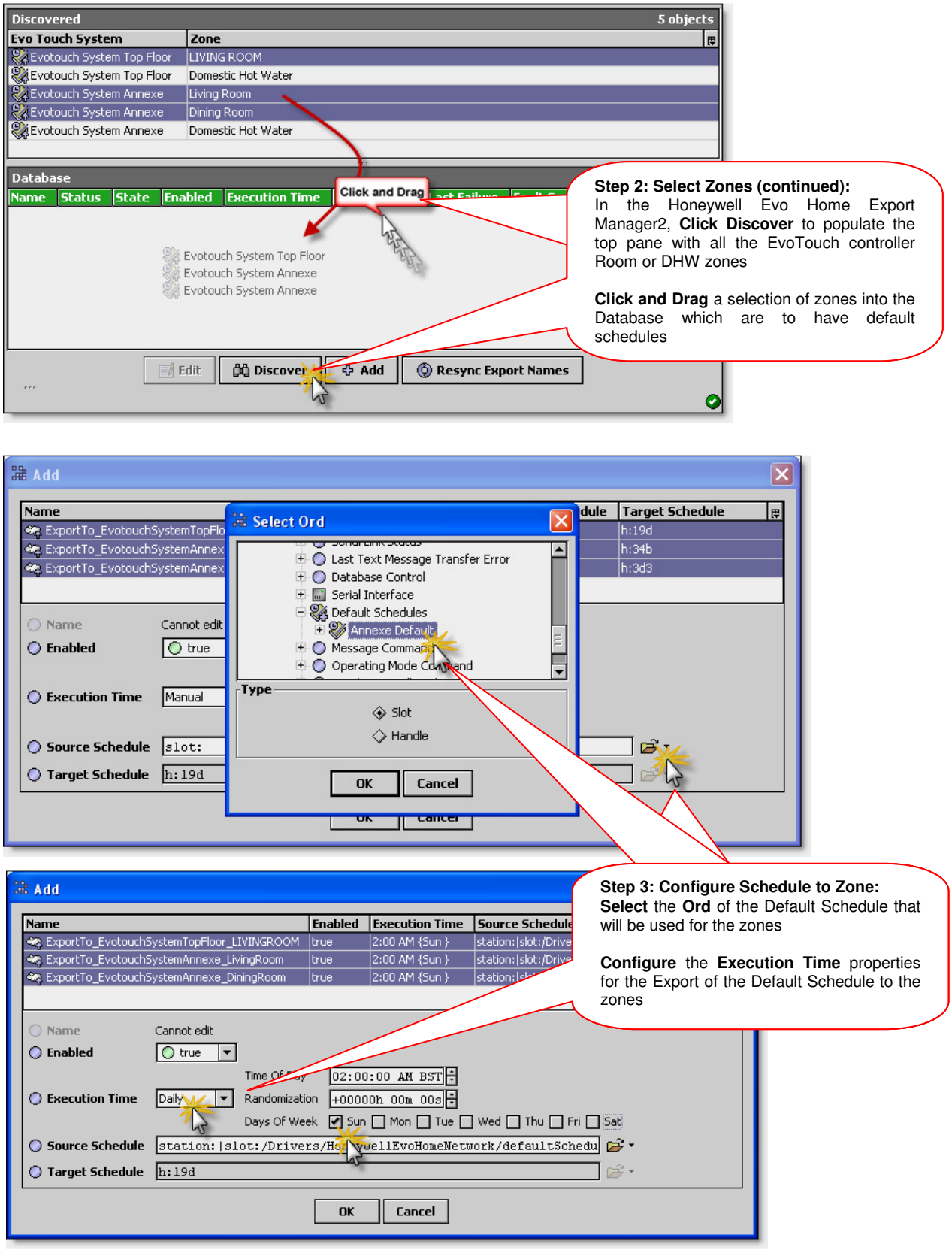


Figure 4-7: Default Schedules

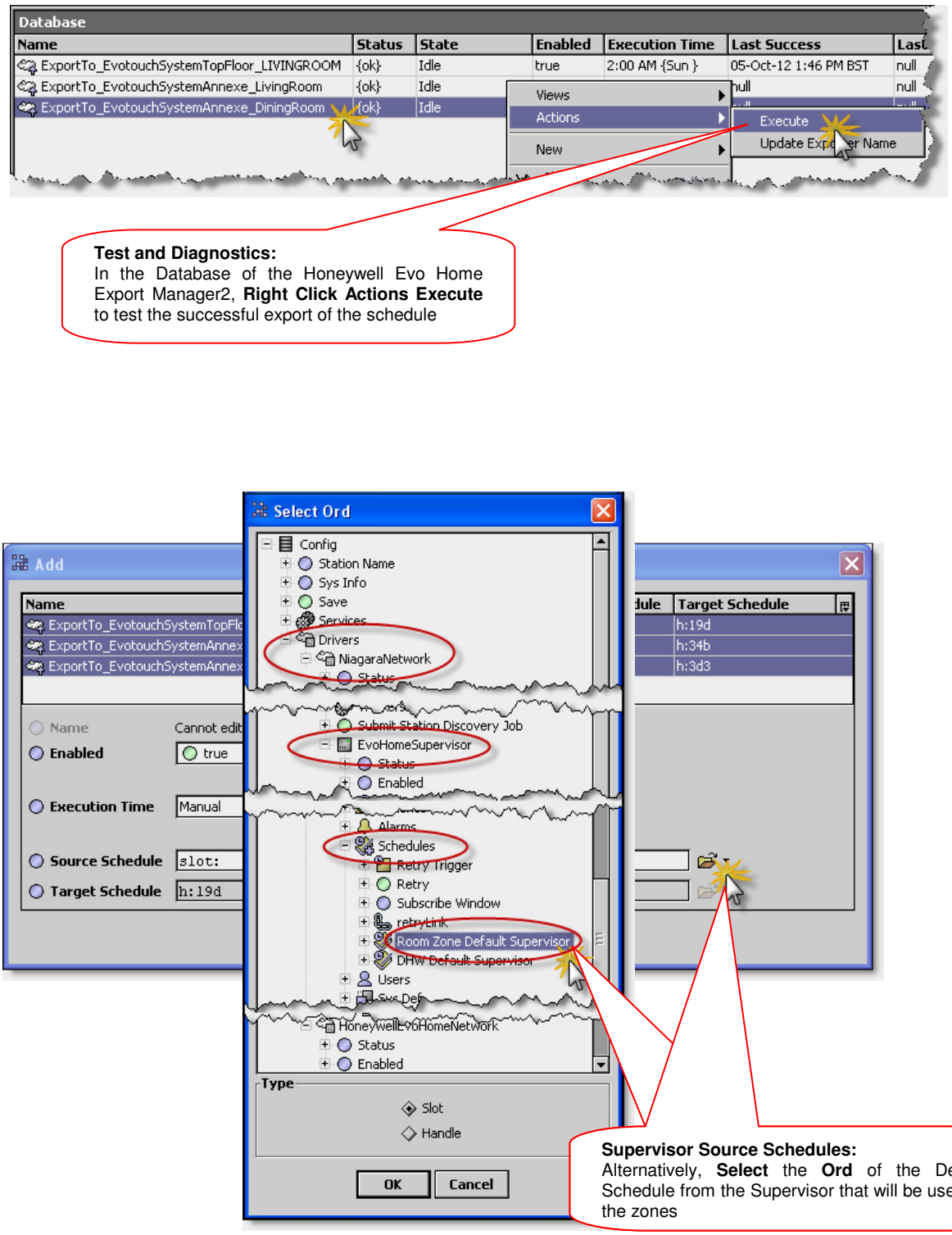


Figure 4-8: Default Schedules

Discovery Outcome Investigation

This use case, illustrated in Figure 4-9, describes an example discovery and shows how the Job Log feedback available in the Job Service within the NiagaraAX framework can be used to investigate discovery outcomes.

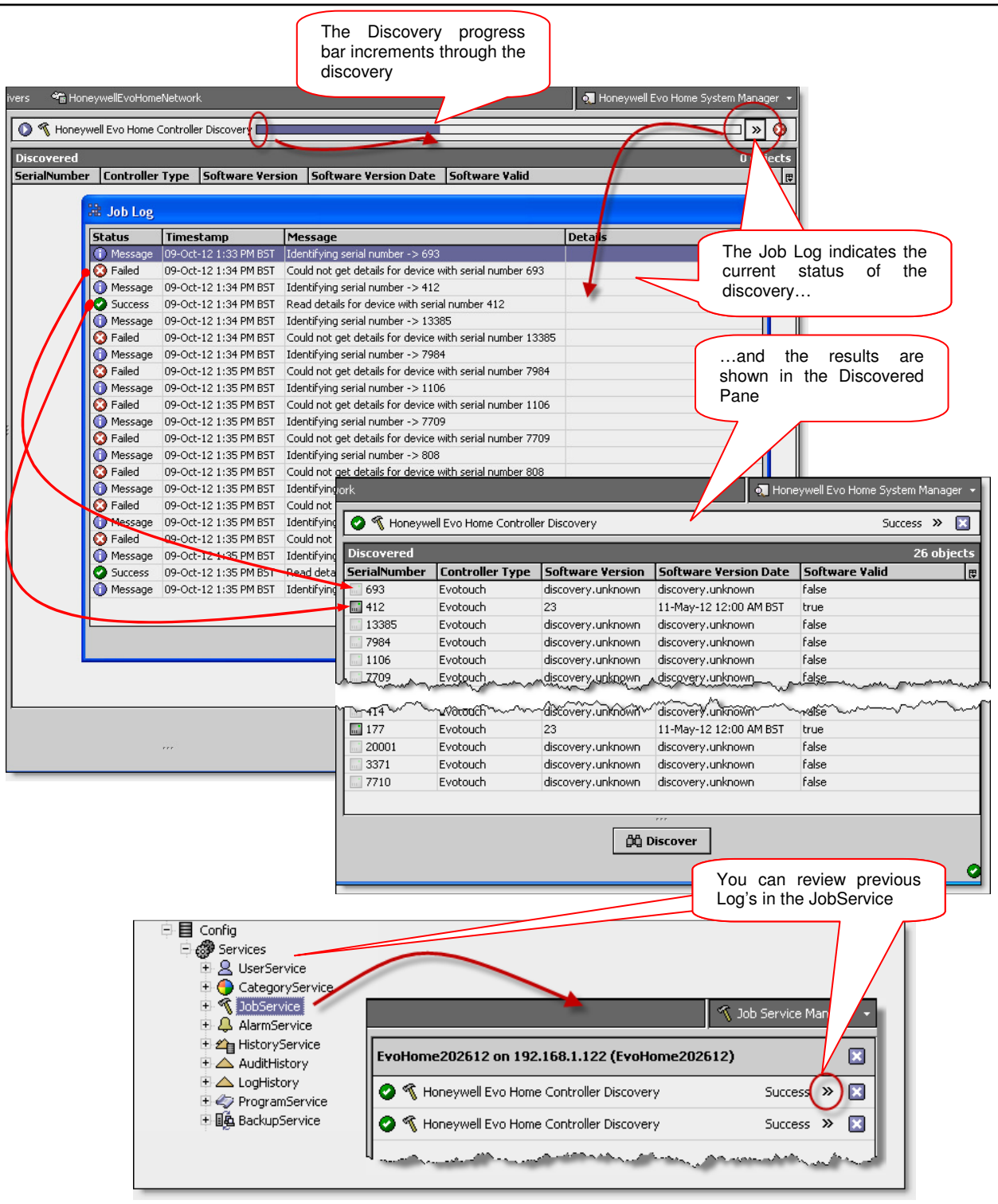


Figure 4-9: Discovery and the Job Log Service

Plugin Guides

Plugins provide *views* of components, and can be accessed many ways—for example, double-click a component in the tree for its *default* view. In addition, you can right-click a component, and select from its **Views** menu. Summary information is provided here about the different EvoHome views.

EvoHome Plugin Guides Summary

Summary information is provided on views specific to components in the EvoHome module as follows:

- Honeywell Evo Home System Manager
- Honeywell Evo Home Schedule Export Manager2
- Honeywell Evo Home Point Manager
- Honeywell Evo Home Wireless Device Manager
- Honeywell Evo Home Schedule Export Manager
- Honeywell Evo Home Schedule Import Manager

Honeywell EvoHome System Manager

The **Honeywell Evo Home System Manager** is the default view of a HoneywellEvoHomeNetwork. Use the Honeywell Evo Home System Manager to "Discover" the EvoTouch Systems (EvoTouch controllers) and to add selected systems into the driver database. Online "discovery" is the only method available to add new EvoTouch Systems (EvoTouch controllers) to the EvoHome Network.

For more details, see "EvoHome System Manager" in the 'NiagaraAX EvoHome Concepts' section.

Added EvoTouch Systems appear in the view's table. By default, the following columns appear in this view:

- **Name**
  The Name of the EvoTouch System

- **Serial Number**
  The Serial Number of the EvoTouch System

- **Software Version**
  The Version of software (firmware) in the EvoTouch System

- **Software Version Date**
  The Date of the version of software (firmware) in the EvoTouch System

- **Status**
  The Status of the connected system. For example {ok}, {disabled}

- **Enabled**
  The Enabled State of the connected system. For example true, false

- **Fault Cause**
  The reason why the status and enabled flags are abnormal. For example 'Installation In Progress' or 'Invalid (Software Version or Date) or Duplicated System

Honeywell Evo Home Schedule Export Manager2

The **Honeywell Evo Home Schedule Export Manager2** is the default view of the Default Schedules container. Use the Honeywell Evo Home Schedule Export Manager2 to "Discover" all the Zones (Room zones and Domestic Hot Water) in every configured EvoHome System. When a Discovered Zone is added to the Database, an 'Export Manager' component (for example ExportTo_EvotouchSystem_LivingRoom) is created in the 'Export Schedules' folder of the associated Evo Home System. The source of the default schedule and its execution method and time can be configured in the Honeywell Evo Home Schedule Export Manager2.

For more details, see "EvoHome Schedule Export Manager" and "About Default Schedules" in the 'NiagaraAX EvoHome Concepts' section.

By default, the following columns appear in this view:

- **Name**
  The Name of the specific Zone or DHW export manager component.

- **Status**
  The Status of the export manager component. For example {ok} or {disabled}

- **State**
  The current State of the export manager component. For example 'Pending' or 'In Progress'

- **Enabled**
  The Enabled State of the export manager component system. For example 'true' or 'false'.

- **Execution Time**
  The current settings for Execution Time of the export manager component system. For example '2:00 AM {Sun Mon Tue Wed Thu Fri Sat}.

- **Last Success**
  The time of the Last Successful export of a schedule to this zone.

- **Last Failure**
  The time of the Last Failed export of a schedule to this zone.

- **Fault Cause**
  The reason of the last failed export of a schedule to this zone.

- **Source Schedule**
  The 'ord' name of the configured source of the default schedule of this zone.

Honeywell Evo Home Point Manager

Use the **Honeywell Evo Home Point Manager** to access EvoHome devices, folders and proxy points. It is the default 'view' of the following folders in every Evo Home System:

- Points Zones And Wireless Devices
- Wireless Device (for example: Outdoor Sensor)
- Zone (for example: Living Room or Domestic Hot water)
- Composite Folder (for example: Setpoint Command, DHW Command or Operating Mode Command)

To view, *double-click* the folder or *right-click* and select Views > Honeywell Evo Home Point Manager.

By default, the following columns appear in this view:

- **Name**
  Niagara name of the EvoHome device, folder or point.

- **Type**
  Niagara type of component, as an EvoHome point component.

- **Out**
  Current last polled value (out slot) of a proxy point, reflecting status and facets.

- **Tuning Policy Name**
  Assigned tuning policy (Default Policy, or other if available and assigned).

Honeywell Evo Home Wireless Device Manager

Use the **Honeywell Evo Home Wireless Device Manager** to access EvoHome wireless devices. It is the default 'view' of every "Wireless Devices" folder. To view, *double-click* the wireless devices folder or *right-click* and select Views > Honeywell Evo Home Wireless Device Manager.

By default, the following columns appear in this view:

- **Name**
  The name of the Wireless Device.

- **Serial Number**
  The serial number of the Wireless Device.

Honeywell Evo Home Schedule Export Manager

The **Honeywell Evo Home Schedule Export Manager** is the default view of the Export Schedules container. Use the Honeywell Evo Home Schedule Export Manager to manually export or view all the 'Export Manager' components (for example Export_To_EvotouchSystem_LivingRoom) of an EvoHome System.

For more details, see "EvoHome Schedule Export Manager" in the 'NiagaraAX EvoHome Concepts' section.

By default, the following columns appear in this view:

- **Name**
The Name of the specific Zone or DHW export manager component.

- **State**
The current State of the export manager component. For example 'Pending' or 'In Progress'

- **Last Attempt**
The time of the Last Attempted export of a schedule to this zone.

- **Last Success**
The time of the Last Successful export of a schedule to this zone.

- **Last Failure**
The time of the Last Failed export of a schedule to this zone.

- **Fault Cause**
The reason of the last failed export of a schedule to this zone.

Honeywell Evo Home Schedule Import Manager

The **Honeywell Evo Home Schedule Import Manager** is an optional view of the Export Schedules container. Use the Honeywell Evo Home Schedule Import Manager to manually import or view all the 'Import Manager' components (for example Import_To_EvotouchSystem_LivingRoom) of an EvoHome System.

For more details, see "EvoHome Schedule Import Manager" in the 'NiagaraAX EvoHome Concepts' section.

By default, the following columns appear in this view:

- **Name**
The Name of the specific Zone or DHW import manager component.

- **State**
The current State of the import manager component. For example 'Pending' or 'In Progress'

- **Last Attempt**
The time of the Last Attempted import of a schedule to this zone.

- **Last Success**
The time of the Last Successful import of a schedule to this zone.

- **Last Failure**
The time of the Last Failed import of a schedule to this zone.

- **Fault Cause**
The reason of the last failed import of a schedule to this zone.

Component Guides

These component guides provides summary help on EvoHome components.

Component Guides Summary

Summary information is provided on components specific to the EvoHome module, listed in no particular order as follows:

- HoneywellEvoHomeNetwork
- HoneywellEvoHomePointDeviceExt (Points Zones and Wireless Devices)
- HoneywellEvoHomeWirelessDeviceFolder (Wireless Devices)
- HoneywellEvoHomeZoneFolder (Zones)
- HoneywellEvoHomeOperationsFolder (Operating Mode Command)
- HoneywellEvoHomeOverride SetpointFolder (Setpoint Command)
- HoneywellEvoHomeDHW StateFolder (DHW Command)
- HoneywellEvoHomeMessageFolder (Message Command)
- HoneywellEvoTouchSystem
- HoneywellEvoHomeZone
- TimeToNumeric
- NumericToTime
- MultipleInputTrigger

HoneywellEvoHomeNetwork

The HoneywellEvoHomeNetwork is the top level component for the EvoHome driver in a station and contains one or more HoneywellEvoTouchSystem folder components. It provides configuration parameters necessary for the driver to communicate with the EvoTouch systems via the HGS80 EIA-232 Gateway Interface. The HoneywellEvoHomeNetwork is also available in the honeywellEvoHome palette.

The HoneywellEvoHomeNetwork component contains a "Default Schedules" folder which is a 'frozen' folder and is the receptacle for all the default schedules. Management of the source of the default schedule and its export method or frequency to the Zones is also done here.

The HoneywellEvoHomeNetwork component contains a "Message Command" which is a 'frozen' component which allows messages to be transmitted to all the EvoHome systems. It has a selection of slots and properties relating to the message and control of sending it. It has some actions:

Message Command Actions

- A "**Send Message**" action is available which enables the Sender, Subject and Message to be entered and selection of Low or High Priority of the message.
- A "**Send Low Priority Message**" action is available which enables the Sender, Subject and Message to be entered in a Low Priority message.
- A "**Send High Priority Message**" action is available which enables the Sender, Subject and Message to be entered in a High Priority message.

For more details about 'Actions' see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

The HoneywellEvoHomeNetwork component contains a "Operating Mode Command" which is a 'frozen' component which allows override control of the Operating Mode of all the EvoHome systems. It has a selection of slots and properties relating to the override. It has some actions:

Operating Mode Command Actions

- An "**Auto**" action is available.
- An "**Auto With Eco**" action is available.
- An "**Auto With Reset**" action is available.
- A "**Day Off Until Date**" action is available.
- A "**Day Off With Eco Until Date**" action is available.
- A "**Holiday Until Date Time**" action is available.
- A "**System Off**" action is available.

For more details about 'Actions' see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

The HoneywellEvoHomeNetwork component contains a "Serial Interface" folder which is a 'frozen' device and has a selection of slots and properties relating to the HGS80 EIA-232 Gateway Interface. It has some actions which allow some diagnostics of the device:

Serial Interface Actions

- A "**Ping**" action is available.
- A "**Reset Serial Link**" action is available to Reset and Restart communications with the interface device.
- A "**Change LED State**" action is available to control the LED on the interface device.
- A "**Get Software Version**" action is available to collect the software version of the interface device.

The HoneywellEvoHomeNetwork component also has the typical selection of slots and properties as most other network components. For details, see "Common network components" in the *Drivers Guide*. In addition, see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

The HoneywellEvoHomeNetwork also has some actions:

EvoHome Network Actions

- A "**Ping**" action is available.
- A "**Synchronise All Fault Logs**" action is available.

For more details about 'Actions' see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

EvoHome Network System Manager

- **Discover**
  Discovers the EvoTouch systems (controllers) within wireless range

For more details about these System Manager functions see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

HoneywellEvoHomePointDeviceExt (Points Zones and Wireless Devices)

The Points Zones and Wireless Devices is a Honeywell EvoHome Point Device Extension that contains Controller level points as well as Controller level Wireless Devices and the Zones in the controller.

The HoneywellEvoHomePointDeviceExt (Points Zones and Wireless Devices) has a Honeywell EvoHome Point Manager view that displays a list of the EvoHome devices, folders and proxy points.

HoneywellEvoHomeWirelessDeviceFolder (Wireless Devices)

Wireless Devices is a Honeywell EvoHome Wireless Device Folder component in an EvoTouch system and is a container for all the Wireless Devices associated with its parent folder.

The HoneywellEvoHomeWirelessDeviceFolder (Wireless Devices) has a Honeywell EvoHome Wireless Device manager view that displays a list of the wireless devices giving their Name and Serial Numbers.

HoneywellEvoHomeZoneFolder (Zones)

The HoneywellEvoHomeZoneFolder is a folder component in an EvoTouch system and a container for all the HoneywellEvoHomeZone folder components in an EvoTouch system.

HoneywellEvoHomeOperationsFolder (Operating Mode Command)

Operating Mode Command is a Honeywell EvoHome Operations Folder (Operating Mode Command) component in an EvoTouch system and is a container for all the points required for monitoring and overriding the operating mode of the EvoTouch controller.

The HoneywellEvoHomeOperationsFolder (Operating Mode Command) has a Honeywell EvoHome Point Manager view that displays a list of the points giving their Name, Type, Out slot and Tuning Policy Name. It has some actions:

Operating Mode Command Actions

- An "**Auto**" action is available.
- An "**Auto With Eco**" action is available.
- An "**Auto With Reset**" action is available.
- A "**Day Off Until Date**" action is available.
- A "**Day Off With Eco Until Date**" action is available.
- A "**Holiday Until Date Time**" action is available.
- A "**System Off**" action is available.

HoneywellEvoHomeOverride SetpointFolder (Setpoint Command)

Setpoint Command is a Honeywell EvoHome Override Setpoint Folder (Setpoint Command) component in an EvoTouch system and is a container for all the points required for monitoring and overriding the setpoint of a Room Zone of the EvoTouch controller.

The HoneywellEvoHomeOverride SetpointFolder (Setpoint Command)) has a Honeywell EvoHome Point Manager view that displays a list of the points giving their Name, Type, Out slot and Tuning Policy Name. It has some actions:

Setpoint Command Actions

- An "**Override Until Next Switchpoint**" action is available.
- A "**Permanent Override**" action is available.
- An "**Override Until Date Time**" action is available.
- An "**Auto**" action is available.

HoneywellEvoHomeDHW StateFolder (DHW Command)

DHW Command is a Honeywell EvoHome DHW State Folder (DHW Command) component in an EvoTouch system and is a container for all the points required for monitoring and overriding the setpoint of a DHW Zone of the EvoTouch controller.

The HoneywellEvoHomeDHW StateFolder (DHW Command) has a Point Manager view that displays a list of the points giving their Name, Type, Out slot and Tuning Policy Name. It has some actions:

DHW Command Actions

- An "**Override Until Next Switchpoint**" action is available.
- A "**Permanent Override**" action is available.
- An "**Override Until Date Time**" action is available.
- An "**Auto**" action is available.

HoneywellEvoHomeMessageFolder (Message Command)

Message Command is a Honeywell EvoHome Message Folder component in an EvoTouch system and is a container for all the points required for sending a message to the EvoTouch controller.

The HoneywellEvoHomeMessageFolder (Message Command) has a Honeywell EvoHome Point Manager view that displays a list of the points giving their Name, Type, Out slot and Tuning Policy Name. It has some actions:

Message Command Actions

- A "**Send Message**" action is available which enables the Sender, Subject and Message to be entered and selection of Low or High Priority of the message.
- A "**Send Low Priority Message**" action is available which enables the Sender, Subject and Message to be entered in a Low Priority message.
- A "**Send High Priority Message**" action is available which enables the Sender, Subject and Message to be entered in a High Priority message.

For more details about 'Actions' see "About the EvoHome Network" in the 'NiagaraAX EvoHome Concepts' section.

HoneywellEvoTouchSystem

The HoneywellEvoTouchSystem is a NiagaraAX 'Device' folder for the EvoHome driver in a station. The driver uses the HoneywellEvoTouchSystem to organise HoneywellEvoTouch controllers in the Network. Typically, one device folder is automatically added for each EvoTouch controller that is added to the database after they are "discovered" by the EvoHome Network System Manager.

The HoneywellEvoTouchSystem component also has a number of specific slots and properties. For details, see "About the EvoTouch System" in the 'NiagaraAX EvoHome Concepts' section.

The HoneywellEvoTouchSystem contains a HoneywellEvoHomePointDeviceExt (Points Zones and Wireless Devices) extension which is a 'frozen' extension.

The HoneywellEvoTouchSystem contains a HoneywellEvoHomeLogBook (Fault Log Book) to enable the routing of the EvoTouch controller Fault Log Book data.

The HoneywellEvoTouchSystem contains a HoneywellEvoHomeScheduleDeviceExt (Export Schedules) device extension which controls the export of schedules to the zones.

The HoneywellEvoTouchSystem has some actions:

Honeywell EvoTouch System Actions

- A "**Ping**" action is available.
- A "**Check Communications**" action is available which will force the transmission of a request/response message to the controller to quickly check communications with the controller.
- A "**Reset Communications**" action is available which will reset the communication timer and the fault monitor logic.
- A "**Request Evo Touch Information**" action is available which will update the device information in this HoneywellEvoTouchSystem.
- An "**Update Zone Name**" action is available which will replace any existing zone name with another name in the EvoTouch System (controller).

For more details about 'Actions' see "About the EvoHome System" in the 'NiagaraAX EvoHome Concepts' section.

HoneywellEvoHomeZone

The HoneywellEvoHomeZone is a folder component in an EvoTouch system and represents a specific EvoTouch zone (for example a 'Living Room' or 'Kitchen'). Domestic Hot Water is also represented as a zone.

The HoneywellEvoHomeZone has a Wireless Devices Folder that contains all the Wireless devices associated with the zone.

The HoneywellEvoHomeZone has a HoneywellEvoHomeOverride SetpointFolder (Setpoint Command) folder that is a container for all the points associated with the zone setpoint.

The HoneywellEvoHomeZone has a HoneywellEvoHomeOverride SetpointFolder (Setpoint Command), or if it is a Domestic Hot Water Zone it has a HoneywellEvoHomeDHWStateFolder (DHW Command) folder that is a container for all the points associated with the zone setpoint monitoring and override function.

The HoneywellEvoHomeZone has a schedule and a number of zone level proxy points relating to the zone.

For more details, see "About the EvoHome Zone" in the 'NiagaraAX EvoHome Concepts' section.

The HoneywellEvoHomeZone has one action:

Actions

- A "**Save Schedule in Default List**" action is available to copy the zone schedule which is contained in the zone's 'Schedule' folder into the "Default Schedules" folder of the HoneywellEvoHomeNetwork component.

For more details about 'Actions' see "About the EvoHome Zone" in the 'NiagaraAX EvoHome Concepts' section.

TimeToNumeric

The TimeToNumeric component converts NiagaraAX time (baja:AbsTime) into its NiagaraAX Status Numeric component parts (minute, hour, day, month, year). It is provided for engineering productivity for wire sheet logic and is available in the palette.

NumericToTime

The NumericToTime component converts NiagaraAX Status Numeric component parts (minute, hour, day, month, year) into NiagaraAX time (baja:AbsTime). It is provided for engineering productivity for wire sheet logic and is available in the palette.

MultipleInputTrigger

The MultipleInputTrigger component fires a StatusBoolean output (Trigger) edge from False to True, after a preset delay of default 1second if any of its inputs that comprise StatusEnum, StatusNumeric, StatusString or StatusBoolean change their state or value. It is provided for engineering productivity for wire sheet logic and is available in the palette.

Related documents

No	Reference	Title
1	teu-jb-139.doc	Requirement specification for the NiagaraAX Framework® Honeywell EvoHome Room Control System Driver
2	RNP	Residential Network Protocol (RNP) Specification
3	IONARemoteAccess_fu_spec-1_6	IONA Remote Access Functional Units Specification
4	teu-jb-143_3.docx	Amendment requirement specification For the EvoHome driver
5	EvoAX Point Names-Device Templates.xls	Architectural design of Evo-Hierarchy-Point, Evo-Point-Details and Wireless Devices-Templates

Acknowledgement

The HoneywellEvoHomeNetwork redistributes '*zlib*' in binary form which is used for schedule and message compression and decompression. The following inclusion is a requirement for zlib's use:

Document Control

Document release	Date	Comments
1	5th Oct '11	WIP First issue to accompany 'Concept' Release (honeywellEvoHome release 1.1.1.5) (JB)
2	7th Oct '11	WIP Additions (JB)
3	2nd Dec '11	Quick Start section updated for Concept Release_2 (JB)
4	13th Dec '11	Updated for Beta Release (JB)
5	23rd Dec '11	Issue with 1.2.1.1 Beta (JB)
6	15th Jan '12	For Comment (JB)
7	16th Jan '12	Comments updated - Issue with 1.2.1.18 Beta (JB)
8	13th Feb '12	Updated to support latest versions of driver and EvoTouch firmware. Issue with 1.4.1.7 Beta (JB)
9	13th Feb '12	Minor additions before issue with 1.4.1.7 Beta (JB)
10	16th Feb '12	Multiple systems added to architecture. More FAQ's. Time, Wireless and Capacity added to Concepts (JB)
11	26th July '12	Rework for Amendment requirement (JB)
12	21st Aug '12	More rework for amendment requirement (JB)
13	1st Oct '12	Feedback from Jürgen Bock added. Updated for version v2.0.2.x (JB)
14	17th Oct '12	Feedback from Jürgen Bock added. Acknowledgement added. More use cases added. Updated for version v2.0.3.x (JB)
15	19th Nov '12	Add 60 min window note to Discovery Stage 1. Add disallowed serial numbers 0 & 1. Added 'About Password Mode'. Updated 'About Time'. Add known limitation of time period restriction. Added 'About Last Update Time'. Updated for version v2.1.0.x (JB)

Prepared by	John Brown e-mail: jbrown@tridium.com	Authorised by	AJ