Instruction

Z-Wave Bridge User Guide

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1 ABBREVIATIONS

Abbreviation	Explanation
API	Application Programming Interface
BC	Bridge Controller
CD	Compact Disc
CP	Control Point
COM	Serial port interface on IBM PC-compatible computers
DLL	Dynamic Link Library
HEX	Intel HEX is a file format for conveying binary information for applications like programming microcontrollers, EEPROMs, and other kinds of chips
SIS	SUC ID Server
SUC	Static Update Controller
UI	User Interface
UPnP	Universal Plug and Play
USB	Universal Serial Bus, a serial bus standard to interface devices

2 INTRODUCTION

2.1 What is Z-Wave UPnP Bridge

Z-Wave UPnP Bridge is Windows .NET application that connects and bridges between Z-Wave nodes and standard UPnP devices. This application could be used as a sample of implementing the features of the Bridge Controller (BC) Serial API.

Z-Wave UPnP Bridge is based on the latest Z-Wave DLL.

2.2 Features

Z-Wave UPnP Bridge application provides the following features:

- When the BC is configured as a primary controller or an inclusion controller it is possible to add and remove nodes
- It is possible to add and remove virtual slave nodes using other controller configured as either primary controller or inclusion controller. Up to 128 virtual slave nodes can be added to the BC.
- When the BC if configured as a primary controller or an inclusion controller it is possible to add and remove virtual slave nodes without involving other controller. Up to 128 virtual slave nodes can be added to the BC.
- Sending BASIC SET ON/OFF and GET commands to Z-Wave nodes in the network
- Bridging a Z-Wave Switch node to a UPnP network as a BinaryLight device
- Bridging an AV Renderer device to a Z-Wave network as a Z-Wave Switch node
- When the BC is configured as a secondary controller it can act as a SUC.
- Full controller replication support.

2.3 Purpose

The purpose of this document is to describe the Z-Wave UPnP Bridge sample application which could be used during custom application development as a code sample etc.

2.4 Audience and prerequisites

The audience is Z-Wave partners and Zensys. It is assumed that the Z-Wave partner already is familiar with the current Z-Wave Developer's Kit.

2.5 Implementation

Z-Wave UPnP Bridge application is implemented in Visual Studio 2005 C# and uses the Microsoft .NET Framework 2.0.

The following external libraries are compiled into the application:

- **Z-Wave DLL**. Z-Wave DLL is a framework that simplifies the development of Windows Forms or Console applications for Microsoft .NET Framework platform. It provides interfaces for calling Serial API functions, handles request timeouts, repeats requests if needed, handles acknowledge signals from devices, handles exceptions, and logs events. Current version contains basic set of the functions to operate with RS232 interface only.
  In this application it is used for protocol related communication. Regarding a detailed description of the Z-Wave DLL refer to [2].

- **WinFormsUI**. Windows Forms Library for handling the docking windows/panes. The original version of this library has been developed by MIT license.

- **ZensysFramework**, **ZensysFrameworkUI**, and **ZensysFrameworkUIControls**. These libraries contain common components such as forms, controls, conversion functions, helpers, and wrappers which could be used in any .NET Z-Wave application.

- **ZWaveCommandClasses**. This library contains the automatically generated C# classes for all the Basic Devices, Generic Devices, Specific devices and Command Classes as they are defined in XML file.

In addition the OpenNETCF Smart Device Framework www.opennetcf.org is used for handling communication on the Windows platform with the Zensys Z-Wave module.

The UPnP stacks have been generated with Intel Authoring Tools for UPnP Technology v1725 found in the directory ‘C:\DevKit_X_YY\Tools\Intel_UPnP\’ on the Developer’s Kit CD. Additional information regarding the UPnP stack generation can be found at

1. http://www.intel.com/technology/UPnP/index.htm
2. http://www.upnp.org/standardizeddcps/documents/MediaRenderer1.0_000.pdf
3. http://www.upnp.org/standardizeddcps/documents/BinaryLight1.0cc.pdf
4. http://www.upnp.org/standardizeddcps/documents/ContentDirectory1.0.pdf

3 GETTING STARTED

3.1 Check the prerequisites

The following components should be pre-installed on the machine that you need to run Z-Wave UPnP Bridge Windows application:

1. .NET Framework, version 2.0 or later
2. Windows Installer 3.0 (Windows Installer 3.1 or later is recommended)

Important: Make sure you have the latest service pack and critical updates for the version of Windows that you are running. To find the recent security updates, visit Windows Update.

3.2 Required Z-Wave hardware

Z-Wave UPnP Bridge application requires a Z-Wave module programmed with Bridge Controller Serial API application and connected to the appropriate serial port.

To program the Z-Wave module, use the firmware HEX file (usually SerialAPI_Ctl_Bridge_ZW0x0x_XX.hex) situated in the directory 'C:\DevKit_X_YY\Product\Bin\SerialAPI_Bridge\'. Finally connect the Z-Wave module to the COM port on the PC.

3.3 Limitations

Z-Wave UPnP Bridge PC application been tested on Windows XP with Service Pack 2 (x86 platform) and requires the prerequisites listed above.

3.4 Install the Z-Wave UPnP Bridge application

1. Exit all programs.
2. In Microsoft Windows, click the **Start** button, and then click **Control Panel**.
3. In Classic view, double-click **Add or Remove Programs.**
4. Click **Add New Programs**, and then click **CD or Floppy**.
5. Click **Next** and then click **Browse** to locate the "**setup.exe**" in the "<optical_drive_name>\data\DevKit\SampleApplications\ZWaveUPnPBridge" folder on Z-Wave Developer's Kit CD or "<drive name>\DevKit_x_xx\SampleApplications\ZWaveUPnPBridge" folder on your hard drive in case you installed Z-Wave Developer's Kit already.
6. Click **Finish** to start the installation. The welcome page appears as shown at the figure below. Please note the copyright notification and click **Next** button.

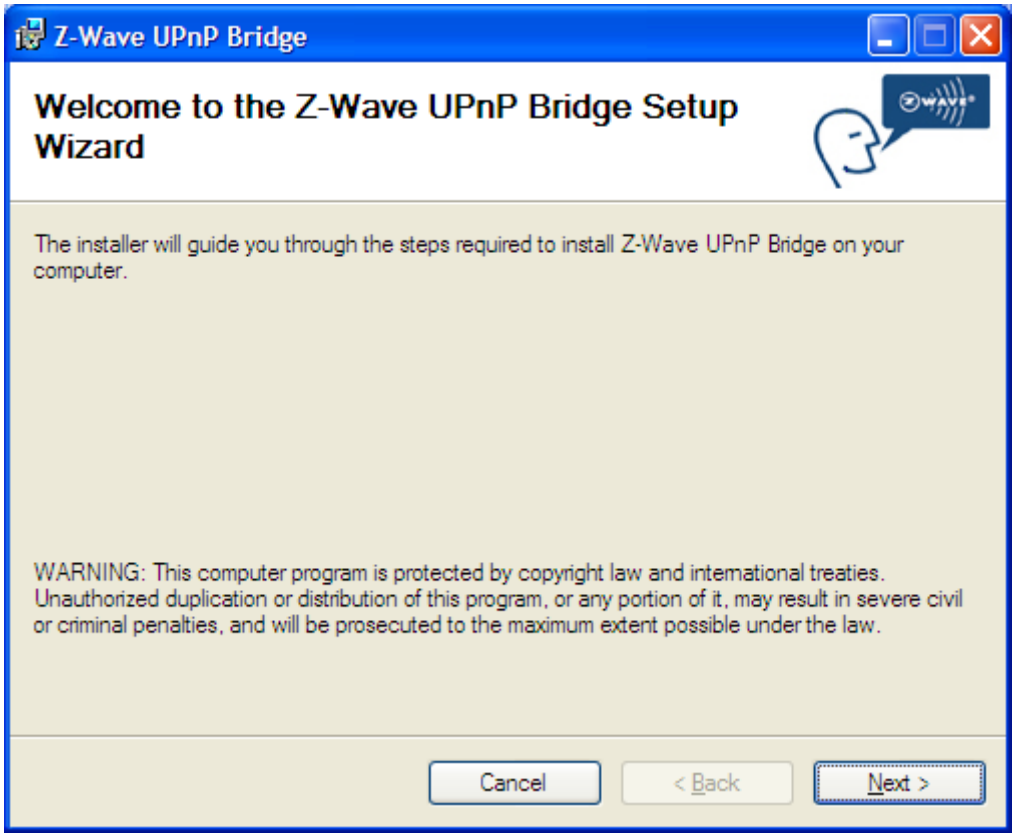

Figure 1. Welcome page of Z-Wave UPnP Bridge installation

7. Select the installation folder and who should be able to use the Z-Wave UPnP Bridge application. Please note, that it is not recommended to move the Z-Wave UPnP Bridge application manually after it has been installed into the above specified folder.
   When done, click **Next**.

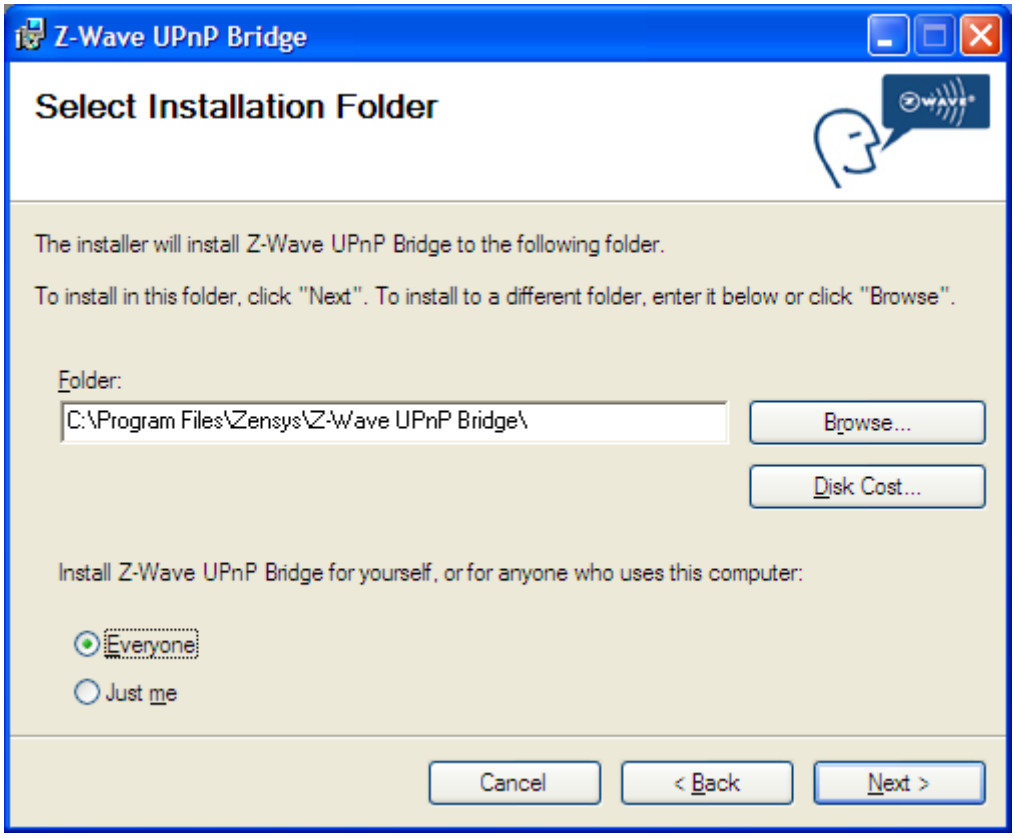

Figure 2. Installation Folder

8. Installation confirmation appears. Click **Next** again to confirm and start the installation.

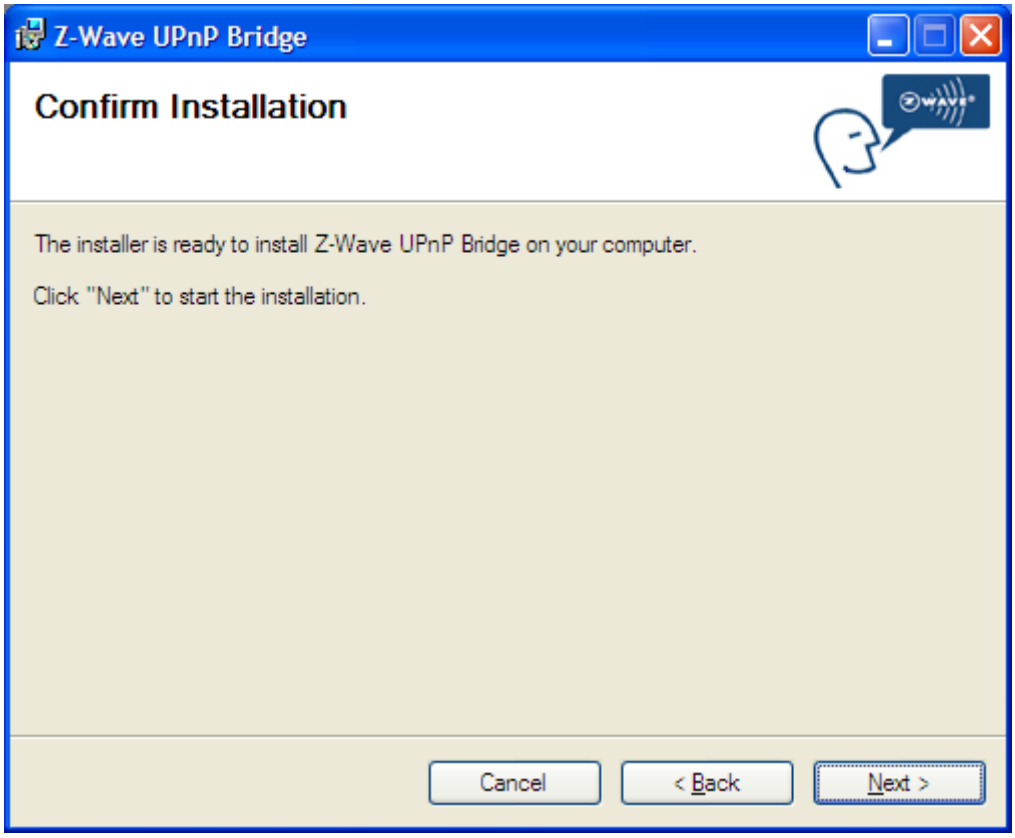

Figure 3. Confirmation page of Z-Wave UPnP Bridge installation

9. The actual installation procedure will pass with progress indicator and final confirmation appears.

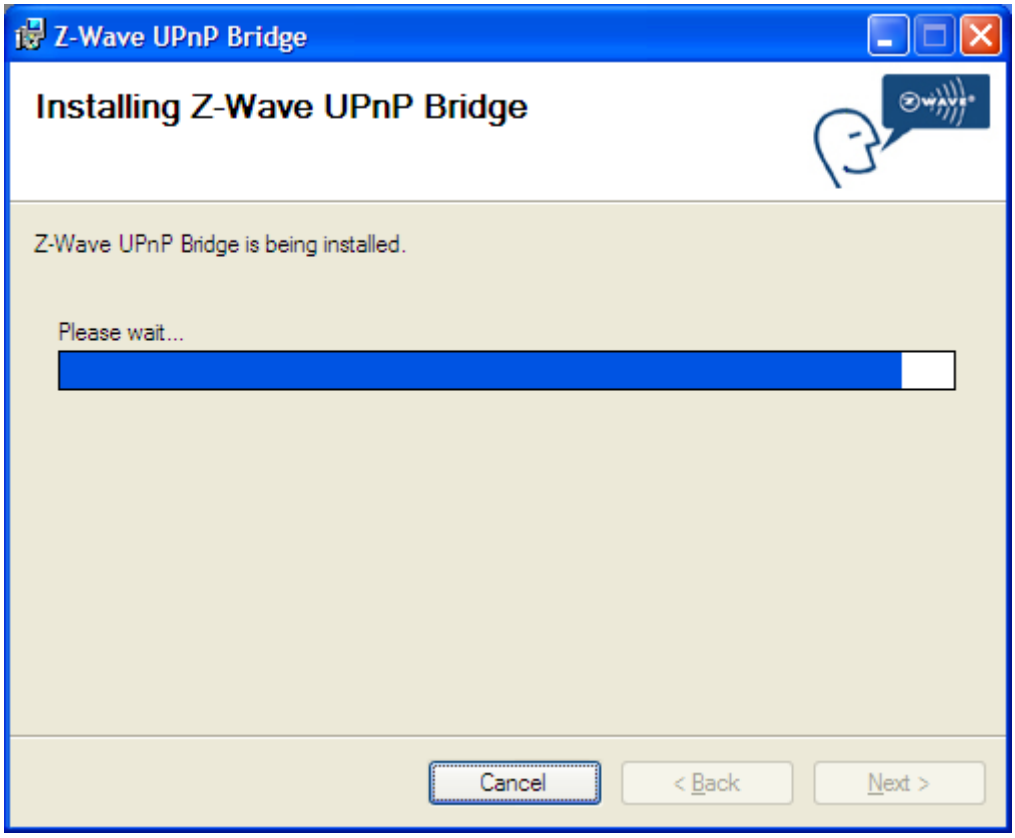

Figure 4. Installation progress

10. Click **Close** to complete the installation.

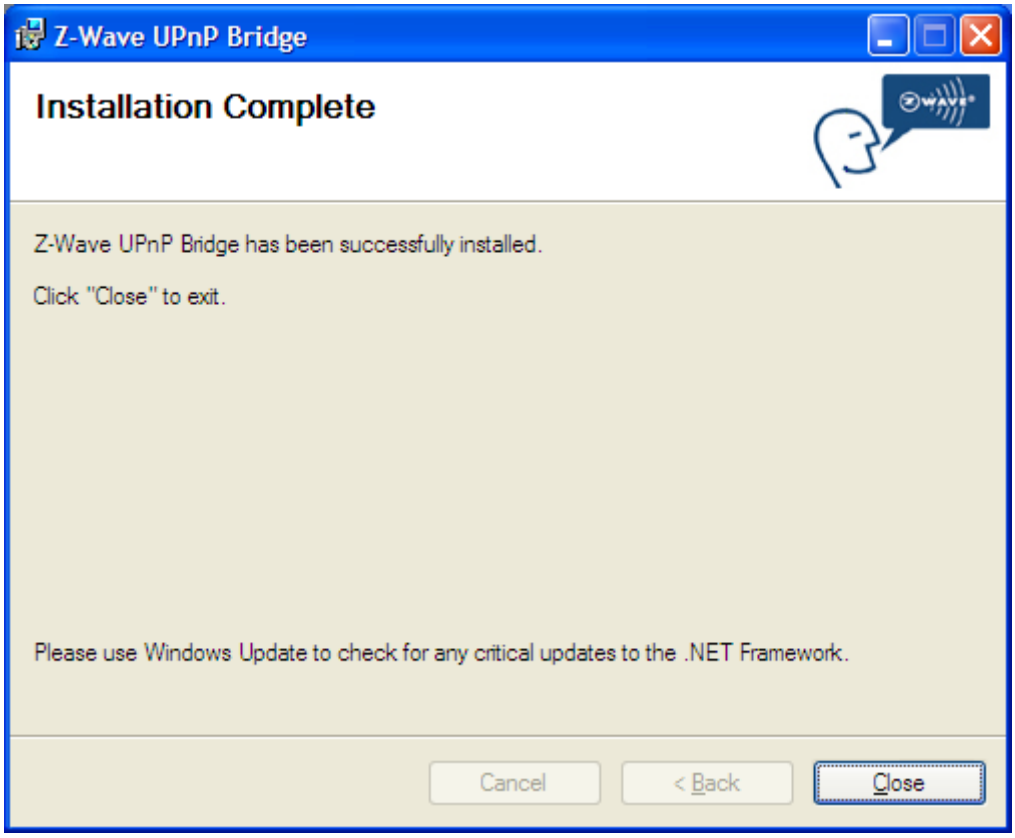

Figure 5. Installation complete

3.5 Start the Z-Wave UPnP Bridge application

You can start the Z-Wave UPnP Bridge using the Start menu. To open the Start menu, click the **Start** button in the lower-left corner of your screen. Or, press the **Windows logo** key on your keyboard. The Start menu appears.

To open Z-Wave UPnP Bridge, click its icon shown in the left pane of the Start menu that displays the most frequently used programs list. If you don't see its icon there, click **All Programs** at the bottom of the left pane. Instantly, the left pane displays a long list of programs in alphabetical order, followed by a list of folders. Click **Zensys** folder, then click **Z-Wave UPnP Bridge** folder and finally **Z-Wave UPnP Bridge** icon.

Each time you start Z-Wave UPnP Bridge, you are actually running the “C:\Program Files\Zensys\Z-Wave UPnP Bridge\Zensys.ZWave.UPnPBridge.exe” executable file, although you do not usually type its name or even see it.

At the first start the application is automatically blocked with the standard Windows Firewall. To continue, click **Unlock**.

Figure 6. Windows Firewall is blocking Z-Wave UPnP Bridge at the first start

Please note, that any other option that are **Keep Blocking** and **Ask Me Later** will prevent Z-Wave UPnP Bridge from normal operation (e.g. scanning for the devices).

3.6 Remove Z-Wave UPnP Bridge

You can uninstall Z-Wave UPnP Bridge from your computer if you no longer use it.

1. Open **Add or Remove Programs** in Control Panel.

   To do it, click **Start**, then click **Control Panel** (in Classical View – click **Start**, then point to **Settings**, and click **Control Panel)**, and then double-click **Add or Remove Programs**.

2. Click the program in the list and then click the **Remove** button. You can sort programs by selecting different options in **Sort by**.

3. Standard confirmation dialog appears. Click **Yes** to continue the removal of the Z-Wave UPnP Bridge software.

4. Z-Wave UPnP Bridge and its settings will be removed without prompting you further.

4 USER INTERFACE

When the PC based Z-Wave UPnP Bridge application is started a window will appear as showed on the figure below.

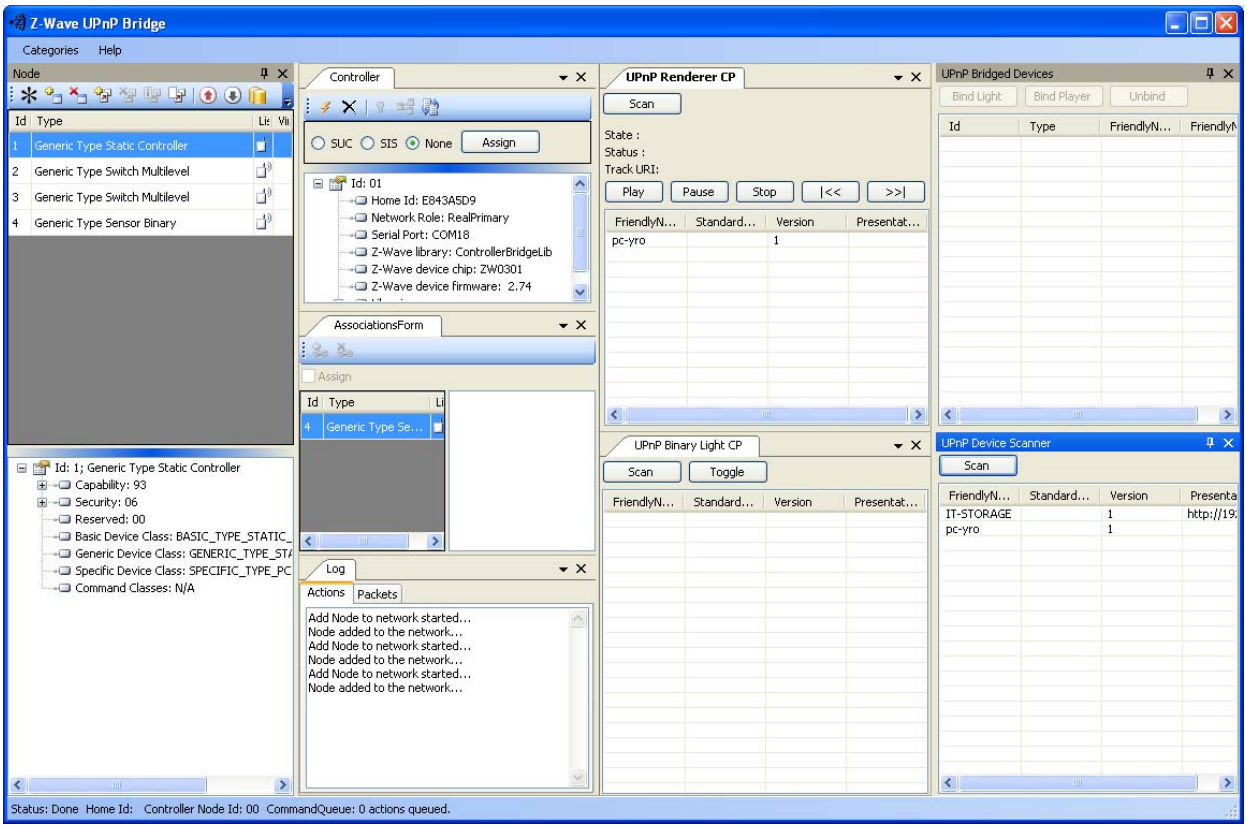

Figure 7. Z-Wave UPnP Bridge main application window

Z-Wave UPnP Bridge main window has the same basic parts as other Windows applications:

- ***Title bar*** displays the name of the program.
- ***Menu bar*** contains items that you can click to make choices in a program.
- ***Status bar*** shows some detailed information about the current program state and the captured data.

Other windows, panes and dialog are specific for this application.

Please note that most controls in the Z-Wave UPnP Bridge application have a tool tip implemented. To get the help for some specific control, point the mouse pointer to it and a small box appears that describes the item.

4.1 Node view

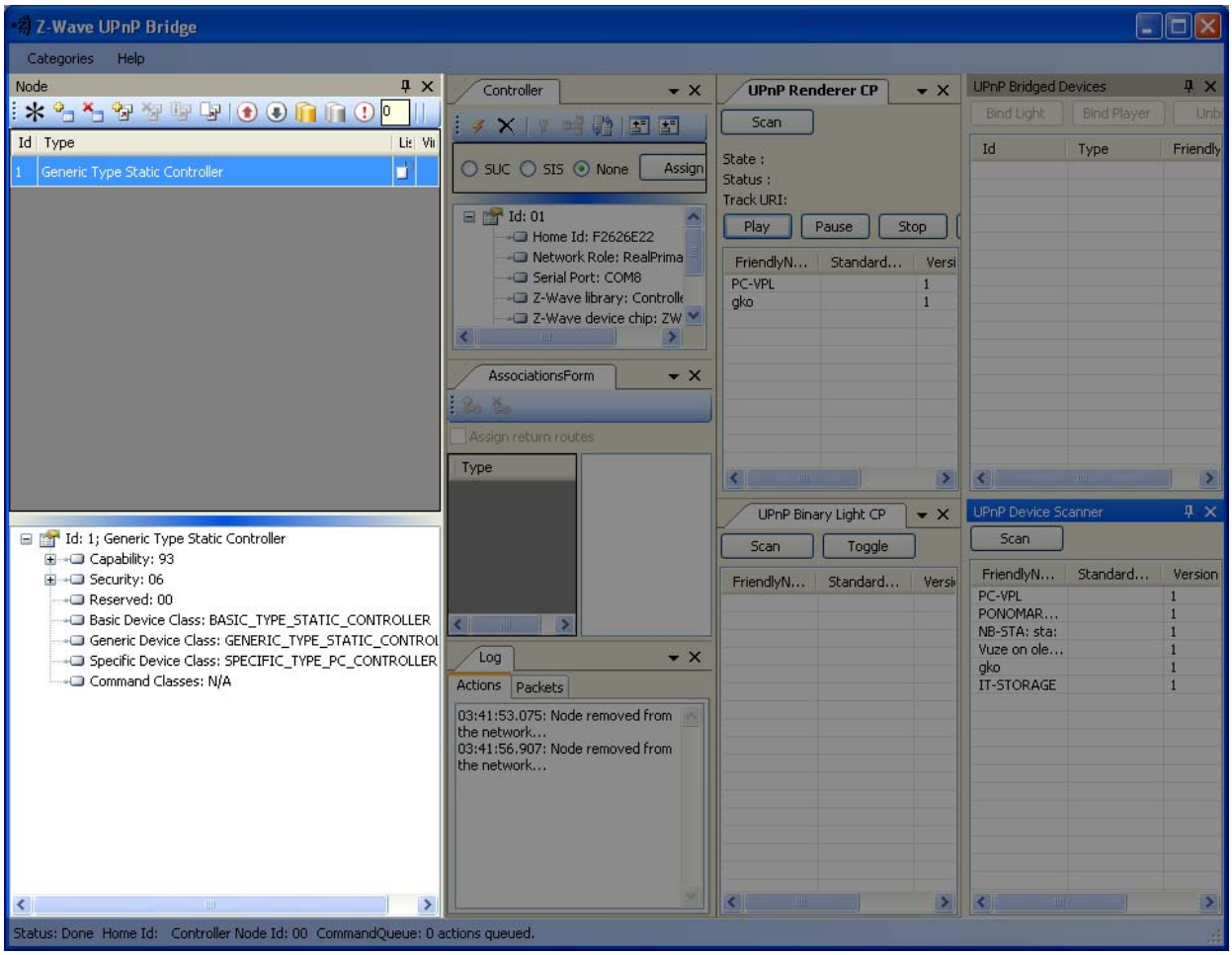

Figure 8. Node view and Node Info pane

The node view contains the node list with all Z-Wave nodes known to be in the network. The list contains the following columns:

- **Node ID:** contains the Z-Wave node ID of the device.
- **Type**: contains the Z-Wave device type in clear text. Unsupported device types will be listed with their generic device type description text if known and with the generic device type number.
- **Listening:** indicates if a node is a listening-type.
- **Virtual**: indicates if a node is a virtual slave node or not.

By clicking on any frame/row in this pane you control what is displayed in the **Node Info** pane

4.1.1 Node controls

4.1.1.1 NW inclusion

Network-wide inclusion allows adding all units to the network, once all of them have been reset and given power.

4.1.1.2 Add

It is possible to add the node when the Bridge Controller if configured as a primary controller or an inclusion controller.

4.1.1.3 Remove

It is possible to remove the node when the Bridge Controller if configured as a primary controller or an inclusion controller.

4.1.1.4 Add Virtual Node

It is possible to add virtual slave nodes without involving other controller when the Bridge Controller is configured as a primary controller or an inclusion controller. Up to 128 virtual slave nodes can be added to the Bridge Controller.

4.1.1.5 Remove Virtual Node

It is possible to remove the virtual slave nodes without involving other controller when the Bridge Controller if configured as a primary controller or an inclusion controller.

4.1.1.6 Tx Reset

(Add the virtual node using other controller).
It is possible to add the virtual slave nodes using other controller configured as Primary controller, Inclusion controller, SUC or SIS. Up to 128 virtual slave nodes can be added to the Bridge Controller.

4.1.1.7 Tx Info

(Remove the virtual node using other controller).
It is possible to remove the virtual slave nodes using other controller configured as Primary controller, Inclusion controller or SIS if the Bridge Controller is configured as Inclusion controller.

4.1.1.8 Basic Set On

To send the BASIC SET command to switch the selected node ON.

4.1.1.9 Basic Set Off

To send the BASIC SET command to switch the selected node OFF.

4.1.1.10 Switch All On

To send the BASIC SET command to switch all nodes ON.

4.1.1.11 Switch All Off

To send the BASIC SET command to switch all nodes OFF.

4.1.1.12 Send NOP

This button is used to send a NOP frame to the selected node. The number of NOP frames is set in the field beside.

4.1.2 Node Info pane

Node Info pane displays the details about the current node.

4.2 UPnP Device Scanner view

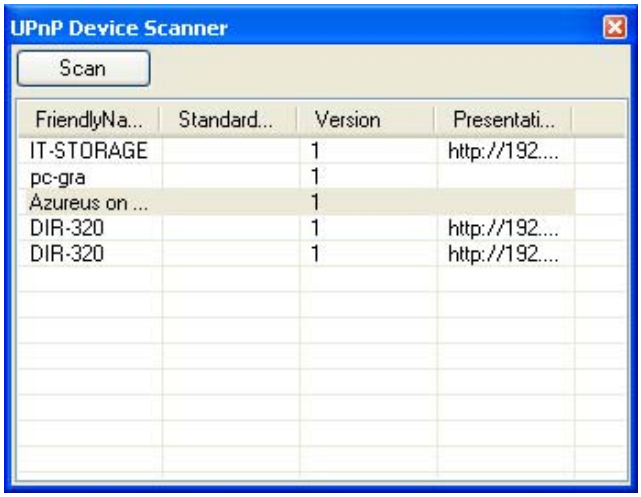

Figure 9. UPnP Device Scanner view

The UPnP Device Scanner window contains a list of all detected UPnP devices.

In addition a Scan button is available to allow the user to initiate a search for new UPnP devices.

4.3 UPnP Bridged Devices view

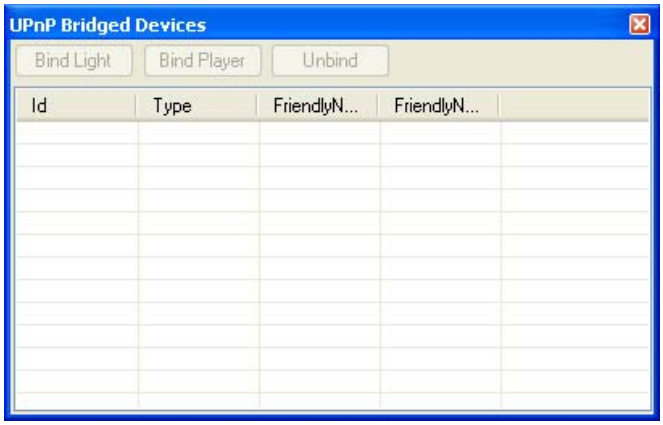

Figure 10. UPnP Bridged Devices view

The UPnP Bridged Devices view contains a list of all devices that currently are bridged. The bridged devices list window contains the following columns:

- **ID:** Displays the Z-Wave node ID of the bridged device.
- **Type:** Displays the Z-Wave device type name.
- **FriendlyName:** Displays the UPnP 'Friendly name'.

The Bridge Controller is able to change the bridge status – to start the bridging Z-Wave device to UPnP. If the selected Z-Wave node is a bridgeable device and not bridged then it is possible to specify the UPnP friendly name and bridge the Z-Wave device to UPnP.

To operate with the binding, the following command buttons are available:

- **Bind Light**, which bridges the selected device as UPnP Binary Light;
- **Bind Player**. It is possible to bridge the UPnP AV Renderer device to a virtual Z-Wave slave node, which enables the UPnP AV Renderer device to be controlled as a virtual Z-Wave Multilevel Switch node. In this case Bridge Controller translates Z-Wave 'On' command to UPnP 'Play' command and sends it to the Renderer. It also translates Z-Wave 'Off' command to an UPnP 'Stop' command;
- **Unbind**, which stops the bridging of the selected device

4.4 UPnP Binary Light CP view

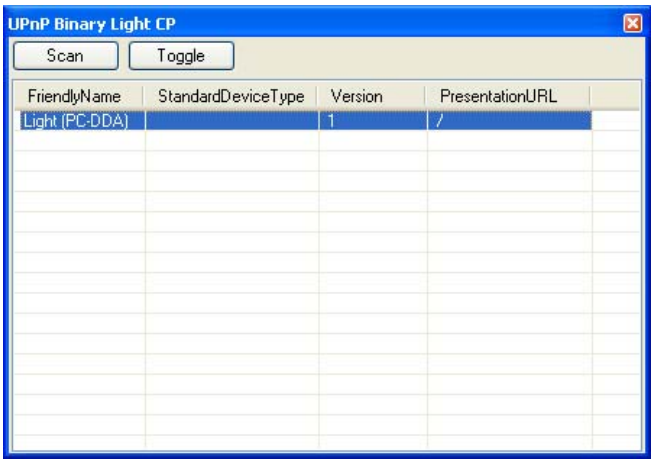

Figure 11. UPnP Binary Light CP view

The UPnP Binary Light CP (Control Point) window contains the list where all detected UPnP BinaryLight devices appear. The two buttons, **Scan** and **Toggle**, are available for operation.

4.5 UPnP Renderer CP window

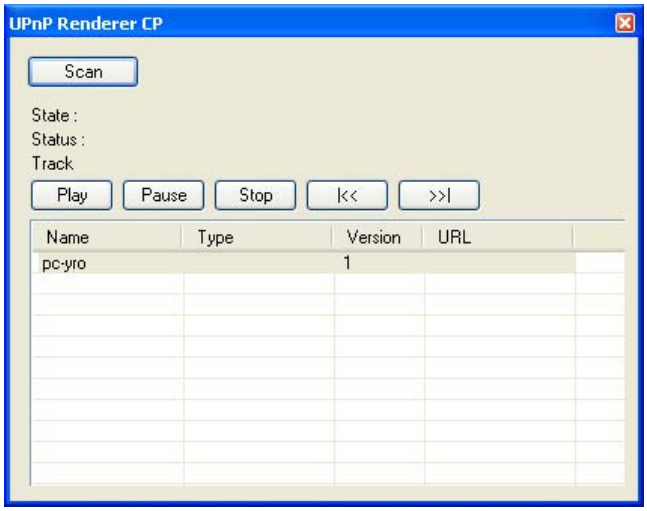

Figure 12. UPnP Renderer CP window

The list displays all detected UPnP AV Renderer devices.

Player-type controls provide operation capabilities for a simulated media player device.

4.6 Controller view

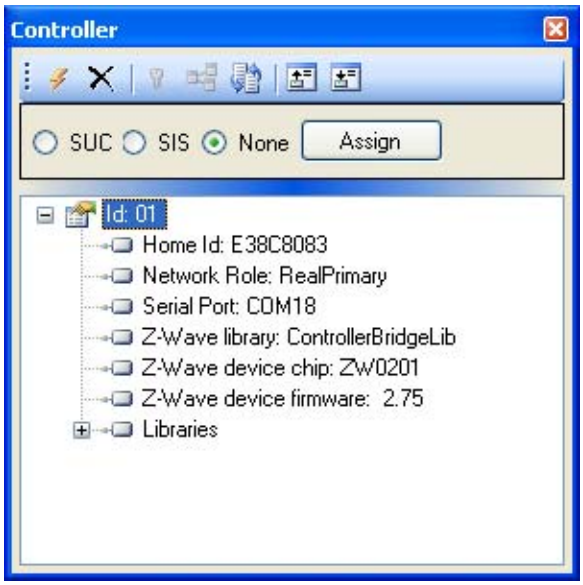

Figure 13. Controller window

The Controller control box contains information regarding the connected BC module:

Controller ID - Displays the NodeID (in hexadecimal) of the BC module in the Z-Wave network.

Controller HomeID - Displays the HomeID (in hexadecimal) of the Z-Wave network.

Controller Network Role – Displays the current role of the controller in the network.

Serial Port – Displays the serial port in use.

Z-Wave Library – Displays the library type of the Z-Wave BC module.

Z-Wave device chip – Displays the Z-Wave device series.

Z-Wave device firmware – Displays the Z-Wave device firmware version.

The controller control box contains the following buttons:

- **Start Learn Mode**. The Bridge Controller enters the replication receive mode making it possible to replicate to it from a primary/inclusion controller and thereby making the Bridge Controller either a secondary, a SUC or an inclusion controller in a Z-Wave network.
- **Reset**. The Bridge Controller resets and removes all network information from the application.
- **Create New Primary**. A SUC can create a new Primary Controller in the network if the existing Primary controller fails.
- **Request Update**. It is possible to request the network updates from SUC/SIS, when Bridge Controller is a member of a Z-Wave network where another controller is acting as a SUC/SIS.

- **Shift.** To shift primary role to another controller in the network.
- **Load Command Classes from device memory.** To load command classes from the device memory (previously saved to device memory).
- **Save Command Classes to device memory.** To save command classes from the PC Controller application memory to the Static Controller device memory.

The *Network Role Option* section has controls to assign the role of the SC in the network:

- **SUC – Static Update Server**
- **SIS – Static Update Controller with ID server**
- **None**

If the BC module is requested (by the primary controller) to become SUC in the Z-Wave network then the primary controller will notify it when a node is added or removed from the Z-Wave network.

4.7 Command Class

Figure 14. Command Class

The **Command Class view** is used to send a specified command class to a selected node. It has the following items:
• **Command Classes**: drop-down list to select a command class;
• **Command Name**: drop-down list to select a command name belonging to the selected class;
• **Command Parameters Grid**: to enter command parameters.

4.8 Associations Form

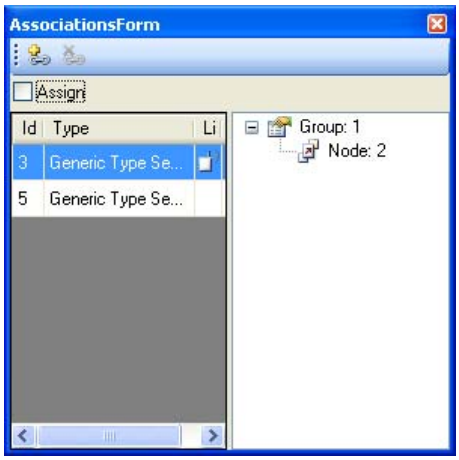

Figure 15. Associations Form

The **Associations** Form has a *Menu Bar*, and two fields: *Source* and *Groups*. It is used to set up associations between nodes.

The *Menu Bar* has two items:

Create – Creates an association between selected nodes.

Remove – Removes selected association.

The left field shows the list of available source nodes that support the Association command class, e.g. Binary sensor.

The right field shows the association groups that can be or have been created.

4.9 Log window

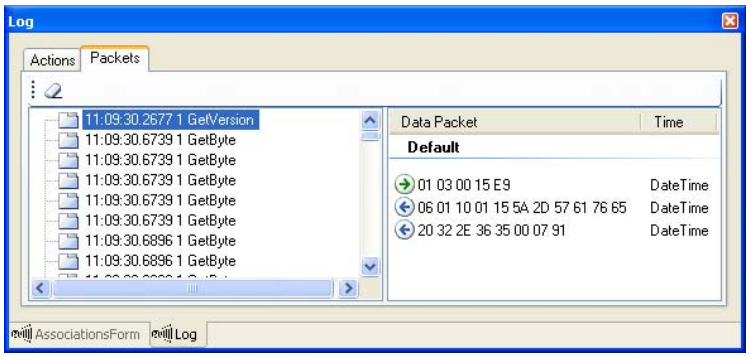

Figure 16. Log window

The Log window maintains logs about commands and communications which are send to and from the connected to the selected serial port Z-Wave device.

Each log entry includes the timestamp informing when the log entry occurred and the log text.

The Log window contains two buttons:

- **Clear**, to remove all the log entries.
- **Copy**, to place the selected log entries to the Clipboard.

4.10 About dialog

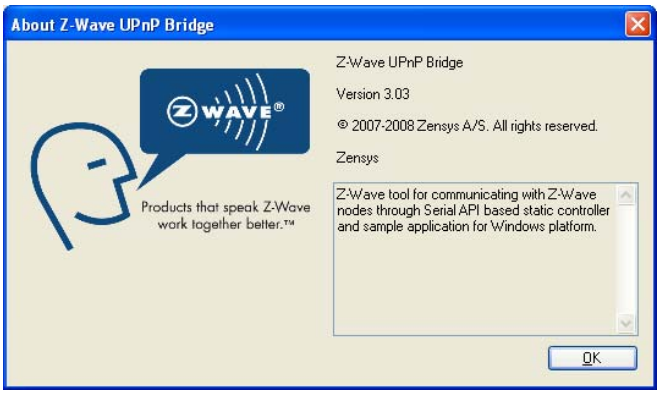

Figure 17. About dialog

About dialog provides the short description of the application, its version and copyright.

To open the About dialog, click **Help** menu, then select **About**.

5 FUNCTIONALITY

5.1. Node

5.1.1 How to add a node

5.1.1.1. The PC based Bridge Controller is Primary / Inclusion / SIS

In order to add a node to the Z-Wave network, activate the button 'Add'. When activating this button, the Status popup message will display 'Press shortly the pushbutton on the node to be included in the network'. Select the node that should be added to Z-Wave network by activating the node's button. During the inclusion process, the node must be located at its final position, so that it can obtain the correct neighbours within its range. If the operation was successful, information regarding the node type will be displayed in the node list. The PC based BC reduces the RF output power during the inclusion process which can cause range problems because it is static, i.e. located in a fixed position. It is therefore recommended to use a portable controller as primary for adding new nodes to the Z-Wave network.

5.1.1.2. The PC based Bridge Controller is Secondary

It is not possible to add nodes to the Z-Wave network.

5.1.1.3. The PC based Bridge Controller is SUC

It is not possible to add nodes to the Z-Wave network.

5.1.2 How to remove a node

5.1.2.1 The PC based Bridge Controller is Primary / Inclusion / SIS

To remove a node from the Z-Wave network, select the node in the node list and activate the button 'Remove'. After activating the button the Status popup message will display 'Press shortly the pushbutton on the node to be excluded from the network'. If this operation was completed successfully, the node and its information will now be removed from the node list. The PC based Bridge Controller reduces RF output power during the exclusion process which can cause range problems because it is static, i.e. located in a fixed position. It is therefore recommended to use a portable controller as primary to remove a node when having range problems.

5.1.2.2 The PC based Bridge Controller is Secondary

It is not possible to remove nodes from the Z-Wave network.

5.1.2.3 The PC based Bridge Controller is SUC

It is not possible to remove nodes from the Z-Wave network.

5.1.3 Network Wide Inclusion

To start the process of mass inclusion of nodes to the controller, press the Network Wide Inclusion button. The dialog will appear carrying the text: “Controller is waiting for the node information… Press shortly the pushbutton on the node to be included in the network.”

Once the inclusion process is finished, press the ‘Abort Action’ button.

5.1.4 Switching a node or a subset of nodes on and off

5.1.4.1 The PC based Bridge Controller is Primary / Inclusion / SIS / Secondary / SUC

On

Activate the button ‘On’ to send the ‘On’ command to the selected node(s).

Off

Activate the button ‘Off’ to send the ‘Off’ command to the selected node(s).

5.1.5 Add a virtual node

It is possible to add virtual slave nodes without involving other controller when the Bridge Controller is configured as a primary controller or an inclusion controller. Up to 128 virtual slave nodes can be added to the Bridge Controller.
Virtual slave nodes can be used for binding other devices to the Bridge Controller.

5.1.6 Remove a virtual node

It is possible to remove the virtual slave nodes without involving other controller when the Bridge Controller if configured as a primary controller or an inclusion controller.

5.1.7 Tx Reset. (to add the virtual node using other controller).

It is possible to add the virtual slave nodes using other controller configured as Primary controller, SUC, SIS or Inclusion controller if the Bridge Controller is in the network of that controller. Up to 128 virtual slave nodes can be added to the Bridge Controller.
When the button is pressed, the Bridge Controller transmits the node information frame with home ID and node ID set to zero, which makes it possible for a primary controller, SUC, SIS or an inclusion controller to add a virtual bridge node into the Z-Wave network. To simplify the implementation, it is acceptable to present the virtual slave(s) as a Multilevel Power Switch.
Please note that the Bridge controller must receive replication again (be re-included) into the network in order the virtual node(s) appear in its Node List.

5.1.8 Tx Info (to remove the virtual node using other controller).

It is possible to remove the virtual slave nodes using other controller if the Bridge controller is configured as Inclusion controller.
When the button is pressed, the Bridge Controller transmits a node information frame for the virtual slave node selected in the Node List, and then enters LearnSlaveMode for 1 second. This makes it possible for another controller (Primary, Inclusion controller or SIS) in the Z-Wave network to remove the selected virtual slave node from the Z-Wave network.

5.2 UPnP Device Scanner

Press the **Scan** button to scan the network for UPnP devices. Found devices will be presented in the list.

5.3 UPnP Bridged Devices

To bridge a device to a virtual Z-Wave node:

1. Select a virtual node from the node list;
2. Select a device from UPnP Device Scanner or from UPnP Binary Light CP;
3. Press **Bind Light** or **Bind Player**, appropriately.

To unbind a device, select it and press **Unbind**.

5.4 UPnP Binary Light CP

When a new Binary Light is activated, it is shown in the list at once.

To re-scan the list of the available UPnP BinaryLight devices, click **Scan**.

To toggle (switch between ON or OFF state) the selected UPnP BinaryLight device, click **Toggle**.

5.5 UPnP Renderer CP

The list displays all detected UPnP AV Renderer devices.

To initiate the search for Renderers on the UPnP network, click **Scan**.

To send the command to UPnP AV Renderer, use the following buttons (if Renderer device is selected):

- **Play**, sends Play command to the selected Renderer
- **Pause**, sends Pause command to the selected Renderer
- **Stop**, sends Stop command to the selected Renderer
- **|<<** (Skip Backward), sends the Previous (title) command to the selected Renderer
- **>>|** (Skip Forward), sends the Next (title) command

5.6 Controller

5.6.1 Including a PC based Bridge Controller to a network

5.6.1.1 PC based Bridge Controller is Primary / Inclusion / Secondary / SUC

When including a PC based BC to a network, activate the 'Add Node' button on the primary controller, and then activate the 'Start Learn Mode' button on the second PC based BC (the sequence of these two steps is not vital). This will include the SC into the Z-Wave network and transfer the complete network topology. Further it is possible to update the network topology in an existing secondary controller.

If the replication went successfully, then the second PC based BC's functionality depends on the selected option button:

If 'SIS' has been chosen, and there does not already exist one in the network, the BC will become the SIS in the network. If a SIS is already present, the BC will become an Inclusion controller.

If 'SUC' has been chosen, and there does not already exist one in the network, the BC will become the SUC in the network. If a SUC is already present the BC will become a secondary controller.

If 'None' has been chosen, then BC will become a secondary or inclusion controller.

5.6.1.2 PC based BC is Primary

It is not possible to replicate to a primary BC.

5.6.1.3 PC based BC is SIS

It is not possible to replicate to a BC when it is SIS.

5.6.1.4 PC based BC is Secondary / SUC

It is not possible to add a new secondary controller to the Z-Wave network using a PC based BC.

5.6.2 Create new primary

5.6.2.1 PC based BC is Primary / Inclusion / SIS

It is not possible to create a new primary controller because only one primary is allowed in the network.

5.6.2.2 PC based BC is Secondary

It is not possible to create a new primary controller if a PC based BC is a secondary controller without SUC functionality.

5.6.2.3 PC based BC is Secondary with SUC functionality

If the primary controller is defect, then it is possible to create a new primary controller in the Z-Wave network. Set the new controller in 'Learn mode' and activate the 'Create New Primary' button on the PC based BC. The new controller is now included as primary into the network and receives the complete network topology.

On how to create a PC based BC secondary with SUC functionality, please see reference [4].

WARNING: Avoid including multiple primary controllers.

5.6.3 Reset controller

5.6.3.1 PC based BC is Primary /Inclusion / SIS / Secondary / SUC

To reset the PC based BC, activate the 'Reset Controller' button. Only the PC based BC will be removed from the Z-Wave network. See also paragraph 5.1.2 regarding how to exclude nodes from the network.

5.6.4 Request update of PC based BC

5.6.4.1 PC based BC is Primary / SIS / SUC / Secondary

It is not possible to request network topology update from another controller.

5.6.4.2 PC based BC is Inclusion

The PC based BC can request network topology updates from a Static Update Controller (SUC) by pressing the 'Request Update' button.

5.6.5 Controller shift

5.6.5.1 PC based BC is Primary

To shift the primary role from the PC based BC to another controller in the network, activate the 'Start Learn Mode' button within the controller to be made primary, and the 'Shift' button within the second controller interface. The second PC based BC will now become Secondary, whilst the first one will become Primary.

5.6.5.2 PC based BC is Inclusion / SIS / Secondary / SUC

It is not possible to shift primary role from the PC based BC.

5.6.6 Save Command Classes to device memory

By default, command classes are not stored in the Static Controller memory, but it is possible to save them to the Static Controller's memory using this function. This can be used if a configured Static controller is to be used with another PC.

5.6.7 Load Command Classes from device memory

It is possible to load previously saved command classes from the Static Controller memory using this function.

5.7 Command Class

Activate the **Command Class Tab** to send specific command classes to nodes.

5.7.1 Send frame with a specific command

5.7.1.1 PC based SC is Primary /Inclusion / SIS / Secondary / SUC

Select the node ID to receive the command from the node list.

Select a command class from the 'Command Classes' dropdown list. When the command class has been selected, the 'Command Name' dropdown list will only contain those commands that are supported by the selected command class. Here as well, a command name must be selected.

Some commands require setting a value, e.g. Value. In such case additional value fields will appear below with their names.

Finally, send the frame by activating the button 'Send'.

5.8 Associations

Activate the **Association Tab** to configure associations between nodes.

Add any nodes that support the Association command class, e.g. Binary sensor.

5.8.1 Create Association

Select the node you want to associate with the node that supports the Association command class, and push the ‘Create’ button. The node ID will appear in the appropriate group.

5.8.2 Remove Association

Select the node to be removed from the association in the Groups list, and press ‘Remove’.

5.9 Log

In the **Actions** tab, the two buttons are present: **Clear** and **Copy**.

The **Clear** button is for clearing the text field. The **Copy** button is for copying the log content to the system buffer.

In the **Packets** tab, it is possible to see the HEX value of any packet. Click on any packet in the left-side packet list to see its HEX value in the details field.

6 REFERENCES

[1] Zensys, INS10247, Z-Wave Application Programming Guide
[2] Zensys, INS10250, Z-Wave DLL User's Manual
[3] Zensys, SDS10242, Z-Wave Device Class Specification
[4] Zensys, INS10236, Instruction, Z-Wave Development Controller User Guide