RapidSE Desktop for Devices Release Notes

v1.9.2

New Features, Bug Fixes and Known Issues

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Revision History

Version	Date	Modified By	Comments
1.9.2	**November 30, 2009**	Alireza Motamed	

1 Introduction

1.1 Overview

This document outlines new features, bug fixes and known issues associated with **RapidSE Desktop for Devices v1.9.2**.

2 New Features and Functionality

2.1 Utilities

2.1.1 Module Properties

The **Properties** dialog, accessed via the **Status Bar** menu, now displays additional information about the Module and its application. This information includes the **Module's Application Type** (**RapidSE Devices** or **RapidSE ESP**), **Device Type** (**Router** or **End Device**), **Serial Communications** (**UART** or **SPI**), **ECC Support** and **Supported Optional Features**.

The **Module's Supported Optional Features** determine those tabs and command groups in the application that will be enabled or disabled based on support or lack of support for a given feature. These include the **Permit Joining** command group and the **Identify**, **Discovery**, **Announcement & Descriptors**, **Event Cache** and **Price Event Cache** sub-tabs.

2.1.2 Restore Defaults

The **Restore Defaults** menu item, accessed via the **Status Bar** menu, provides facilities for restoring the **Module's** non-volatile tokens to their factory presets while also resetting the **Module** and clearing its caches of any volatile information.

2.1.3 Upload Application

The **Upload Application** interface, accessed via the **Upload Application** menu item under the **Tools** menu, provides facilities for flashing a connected **MMB Device** (**USB Stick**, **Development Board** or serially connected **Module**) with the **RapidSE Devices v1.9.x** application firmware.

Though featured in previous versions, the **Upload Application v1.9** interface offers multiple download options based for standard and custom configurations of **RapidSE Devices**.

Prior to downloading a given configuration and flashing a connected device, the **Current Application** radio group is utilized to select the type of application the connected device is currently running; that is, either **RapidSE Devices** or **RapidSE ESP**. This is because these applications recognize distinct **Serial Bootload** frames.

The **Upload Application** tab provides facilities for selecting a standard configuration of **RapidSE Devices** to download. Clicking **Retrieve Builds** queries the download server for available build numbers of the **RapidSE Devices v1.9** application and displays them in the corresponding dropdown menu. The configuration radio groups, consisting of **Communications** (**UART** or **SPI**), **Device Type** (**Router** or **End Device**) and **Security** (**Non-ECC** or **ECC**) determine the firmware configuration selected for download.

The **Upload Custom Application** tab provides facilities for downloading a custom build of **RapidSE Devices** to download. An **8-character alphanumeric Download Code**, provided to the customer by **MMB Research**, is entered in the **Download Code** entry field to retrieve the custom build.

Clicking **Begin Upload** downloads the specified **RapidSE Devices** firmware image from the download server and then uploads the application to the connected **MMB Device**. Clicking **OK** exits the **Upload Application** interface.

2.2 ZigBee Network

2.2.1 Scan and Join Short PANID

The **Short PANID** field, located in the **Scan and Join** group box under the **Network** sub-tab, has been enabled to allow for the entry of the **Short PANID** of the network the user wishes to scan for.

2.2.2 Network States

With the addition of **Status** enumerations for **Service Discovery and Binding** and **Key Establishment** in the **Network Status Response** (**5.2.10**), the **Network Status Bar** will report when the **Module** is in either network state. Furthermore, the **Scan and Join** progress window will take these states into account when determining whether the scan and join process has been successful or not.

Developers processing incoming **Network Status Response** frames must take note that states for **No Joinable Networks Found** and **Key Rejected** have been removed; their enumerations are now used to represent **Service Discovery and Binding** and **Key Establishment** respectively.

2.2.3 Events

The **Events** sub-tab, located under the **ZigBee Network** tab, provides facilities for logging **Network Status** events and **Network Errors**, as well application **Reset Errors** and **Synchronization Errors** which may affect the integrity or state of the **Module's** connection to the network.

Clicking **Start Logging** prompts the application to begin logging **Network Status Response** and **Error** frames received from the **Module**; the button state will change to allow the user to **Stop Logging** when desired.

Events, be they **Network States** or **Errors**, appear as entries in the **Network Event Log** data grid. Selecting a given entry shows the properties of the given event in the **Event Properties** property display grid. Selecting a given event parameter in the **Event Properties** property display grid provides information about the given parameter in the attribute information field at the bottom of the grid.

Clicking **Clear** below the **Network Event Log** will clear the list of its contents.

2.2.4 Security

The **Security** sub-tab, located under the **ZigBee Network** tab, provides facilities for retrieving and settings the **Module's** security tokens. This includes the **Module's Installation Code** and **Preconfigured Link Key**.

The **Preconfigured Link Key** group box provides facilities for setting and retrieving the **Module's Preconfigured Link Key**. Clicking **Read Link Key** queries the **Module** for its **Preconfigured Link Key**, the returned value of which is displayed in the **Link Key** entry field. Clicking **Write Link Key** writes the **Link Key** entered in the **Link Key** entry field to the **Module**.

Developers working against previously working against RapidSE Devices v1.5.x and upgrading to RapidSE Devices v1.9.2 must make note that the ZigBee Network Secondary Header value for reading the Preconfigured Link Key has been modified and should adjust their Secondary Header accordingly.

The **Installation Code** group box provides facilities for retrieving the **Module's Installation Code**. Clicking **Read Installation Code** queries the **Module** for its **Installation Code**, the returned value of which is displayed by the **Installation Code** label.

It should be noted that for either parameter to take effect, the **Module** must be prompted to join a network or rejoin the network it was previously joined to.

2.2.5 Announcements & Descriptors

The **Announcements & Descriptors** sub-tab, located under the **ZigBee Network** tab, provides facilities for monitoring incoming **Device Announcements** from devices that have joined the network as well as facilities for requesting the **Descriptors** of those devices.

The **Device Announcements** group box contains a list for monitoring incoming **Device Announcements** as they are received; each announcement contains the **Node ID** and **EUI64** of the reporting device as well as the date and time at which the announcement was received. Highlighting an announcement allows the user to request the descriptor for that device by clicking **Request Device Descriptor**; this simply issues a **Device Descriptor Request** to the **Module** with the given **Node ID**/**EUI64** pair as parameters. If the target device responds with its descriptor in the form of a **Device Descriptor Response**, that descriptor will be listed in the **Device Descriptor** list under the **Device Descriptor** group box. Clicking **Clear** removes all entries from the **Device Announcements** list.

The **Device Descriptor** group box contains a list for monitoring incoming **Device Descriptor Responses**. A **Device Descriptor Response** contains the detailed addressing and configuration information of the given device, as well as lists of the device's supported **Server** and **Client Clusters**. Highlighting a device descriptor in the list displays lists of the device's supported **Server** and **Client Clusters** in the **Device Descriptor Server and Client Cluster IDs** group box, with each supported cluster represented by its two-byte **Cluster ID**. Clicking **Clear** removes all entries from the **Device Descriptor Responses** list.

The **Descriptor Request** group box provides facilities for requesting the descriptor of a device with a given **Node ID** or **EUI64** address. If the **Enable** checkbox next to the **Node ID** entry field is set, it indicates that the **Node ID** will be used when making the descriptor request; otherwise, the **EUI64** address is used, with the **Node ID** set to the default value of **0xFFFF**. Clicking **Request** issues the **Device Descriptor Request** to the **Module**.

2.3 SE Demand Response

2.3.1 Demand Response Event Start Time

The **Start Time** of a **DRLC Event**, as issued by the **ESP**, is now contained in the **Demand Response Event Start** frame.

Developers previously working against RapidSE Devices v1.5.x and upgrading to RapidSE Devices v1.9.2 must make note to adjust their frame indexes accordingly.

This change has been reflected in the **Events Received** sub-tab of the **SE Demand Response** tab with the addition of a **Start Time** field to the **Current Active Event** display and in **Events Started** list.

2.3.2 Demand Response Event Received

Demand Response and Load Control Events that are set to occur in the future are now relayed by the **Module** to the **Host** upon reception. Facilities have been added to allow the **Host** to **Opt In** or **Opt Out** of these received events.

The **Received** events list, under the **Event** sub-tab of the **SE Demand Response** tab, displays incoming received **Demand Response Events** set to occur in the future. The user may **Opt Out** of a received event by highlighting it and clicking the **Event Override** button to the right of the list, labeled **Opt Out**. An event that has been opted out of will be highlighted in **Green**. The user may opt back into an event by highlighting it and clicking the **Event Override** button again, the label of which will now read **Opt In**.

Clicking **Clear** removes all entries from the **Received** events list.

2.3.3 Demand Response Event Schedule

The **Event Cache** sub-tab, located under the **SE Demand Response** tab, provides facilities for querying both the number of scheduled **DRLC Events** currently cached on the **Module** as well as the **DRLC Events** themselves. Currently, the **Module** may store up to **three upcoming or active DRLC Events**.

Clicking **Request** next to the **Number of Cached Price Events** field queries the number of **DRLC Events** currently cached on the **Module**. The result of the query, which will range from **0 to 3**, is reflected in the figure displayed next to the **Number of Cached Events** label.

To query cached **DRLC Events** from the **Module**, the **Retrieve Count** parameter is first defined via the **Retrieve Count** numeric spinner, with values ranging from **1 to 3** events for retrieval. If the **Retrieve Count** is less than the total number of cached **DRLC Events**, those events with their **Start Time** closest to the **Current Time** take priority.

Clicking **Request Events** queries the **Module** for a number of its cached **DRLC Events** as defined by the **Retrieve Count**. Retrieved events are displayed in the **Cached Demand Response Events** list. Each cached event contains all the parameters of the **Event Start** frame that is issued by the **Module** to the **Host** when the event reaches its assigned **Start Time**.

Clicking **Clear** below the **Cached Demand Response Events** list will clear the list of its contents, but will **not** clear the **DRLC Events** from the **Module's** cache.

2.4 SE Price

2.4.1 Price Event Cache

The **Price Event Cache** sub-tab, located under the **SE Price** tab, provides facilities for querying both the number of scheduled **Price Events** currently cached on the **Module** as well as the **Price Events** themselves. Currently, the **Module** may store up to **two upcoming or active Price Events**.

Clicking **Request** next to the **Number of Cached Price Events** field queries the number of **Price Events** currently cached on the **Module**. The result of the query, which will range from **0 to 2**, is reflected in the figure displayed next to the **Number of Cached Price Events** label.

To query cached **Price Events** from the **Module**, the **Retrieve Count** parameter is first defined via the **Retrieve Count** numeric spinner, with values ranging from **1 to 2** events for retrieval. If the **Retrieve Count** is less than the total number of cached **Price Events**, those events with their **Start Time** closest to the **Current Time** take priority.

Clicking **Request Price Events** queries the **Module** for a number of its cached **Price Events** as defined by the **Retrieve Count**. Retrieved events are displayed in the **Cached Price Events** list. Each cached event contains all the parameters of the **Price Event Start** frame that is issued by the **Module** to the **Host** when the event reaches its assigned **Start Time**.

Clicking **Clear** below the **Cached Price Events** list will clear the list of its contents, but will **not** clear the **Price Events** from the **Module's** cache.

2.5 ZCL General

2.5.1 Attribute Read and Write

The **Attributes** sub-tab, located under the **ZCL General** tab, now provides facilities for querying and writing to the **Attributes** of end devices which have not been explicitly discovered by the **Module**.

Checking the **Enable Custom Addressing** checkbox enables the **Device Address & Cluster** group box, where the **Node ID** and **EUI64** address pair of the target end device may be specified, along with the **Endpoint** and the **Cluster ID** on which the desired **Attribute** resides. Un-checking the **Enable Custom Addressing** checkbox disables the **Device Address & Cluster** group box and forces selection of a discovered end device from the **Discovered Devices list** for **Attribute** manipulation.

2.5.2 Identify

The **Identify** sub-tab, located under the **ZCL General** tab, provides facilities for observing **Identify Commands** received from the **ESP** and relayed by the **Module**.

When an **Identify Command** is received, the **Identify** indicator in the **Current Identify Action** display is highlighted, while the **Time Remaining** field below displays the command's remaining **Identify Duration**. The **Received** list displays each received **Identify Command**. It should be noted that when an **Identify Command** expires, the **Module** relays an **Identify** frame with an **Identify Duration** of **0**.

Clicking **Clear** below the **Received** list clears the list of its contents.

2.6 ZigBee APS

2.6.1 Supported Clusters

The **Supported Clusters** group-box, located under the **ZigBee APS** tab, provides facilities for retrieving and setting a subset of the **Module's** supported **Server** and **Client Clusters**. Currently, support may be toggled for the **Identify Server Cluster** and the **Smart Energy Demand Response and Load Control**, **Price**, **Messaging** and **Simple Metering Client Clusters**.

Clicking **Read Supported Clusters** retrieves the **Module's** supported **Server** and **Client Clusters**, with each checked item in the respective checkbox group representing a supported cluster. Clicking **Write Supported Clusters** sets the **Module's** supported **Server** and **Client Clusters** as selected in each respective checkbox group.

Once the **Module** has joined a network, its **Supported Clusters** are registered in the **ESP's** binding table during **Service Discovery and Binding**. For this reason, **Supported Cluster** settings must be issued **before** the **Module** has joined a network in order to take effect.

2.6.2 Security Options

The **Security Options** group box, located under the **ZigBee APS** tab, provides facilities for retrieving and setting the **Module's Security Options**. These options encompasses whether or not the **Module** performs **Key Establishment**, utilizes **APS Encryption** and whether it makes use of the manufacturer **Installation Code** or a user-defined **Preconfigured Link Key**.

Currently, facilities for enabling and disabling **Key Establishment** have been disabled. Clicking Read **Security Options** retrieves the **Module's** current **Security Options** settings. Clicking **Write Security Options** sets the **Module's Security Options** to the selected settings.

It should be noted that in order for modified **Security Options** to take effect, **Security Options** settings must be issued before the **Module** has joined a network.

3 Known Issues

3.1 Temperature Display

All temperature values are displayed only in degrees Celsius, with no option for conversion to Fahrenheit.

3.2 Price Event Currency Display

The **Currency** string displayed in the **Current Active Price** group box is limited to ISO 4217 designations for Canadian Dollars (CAD) and US Dollars (USD). All other received currency types are displayed as their raw numeric value.