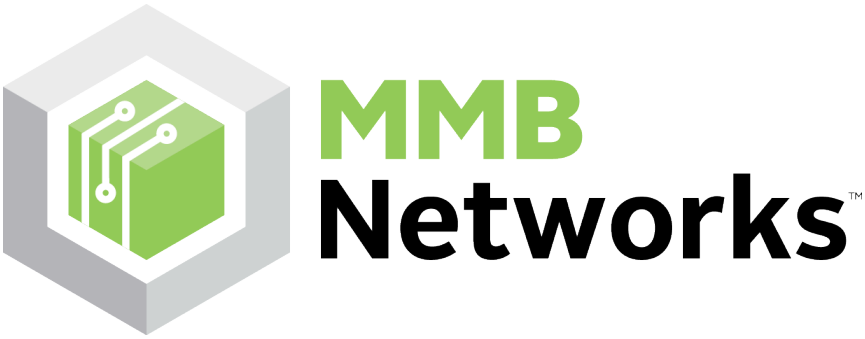

RapidHA Desktop Startup Guide

v0.2

Creating a ZigBee HA 1.2 Demo Using RapidConnect Hardware and RapidHA Desktop

January 13, 2015

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Revision History

Version	Date	Modified By	Comments
0.1	**Sept 26, 2014**	D. Alguire	First Draft
0.2	**Jan 13, 2015**	D. Alguire	Inserting generic references

1 System Requirements

For successful operation of the software, the following is required:

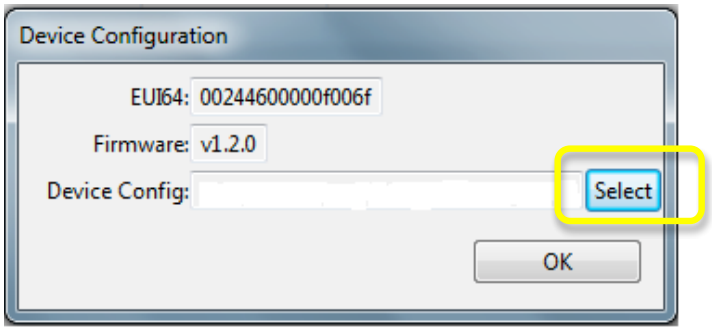
- PC running Windows 7 or later
- Java version 7 or later – the RapidHA Desktop software will provide a link to the correct Java download page if it is not found on the system. A PC running a 64-bit operating system requires 64-bit Java.
- Hidden files/folders set to be visible in Windows explorer. Instructions on how to enable this setting can be found here: http://windows.microsoft.com/en-ca/windows/show-hidden-files#show-hidden-files=windows-7

2 Forming a ZigBee Network

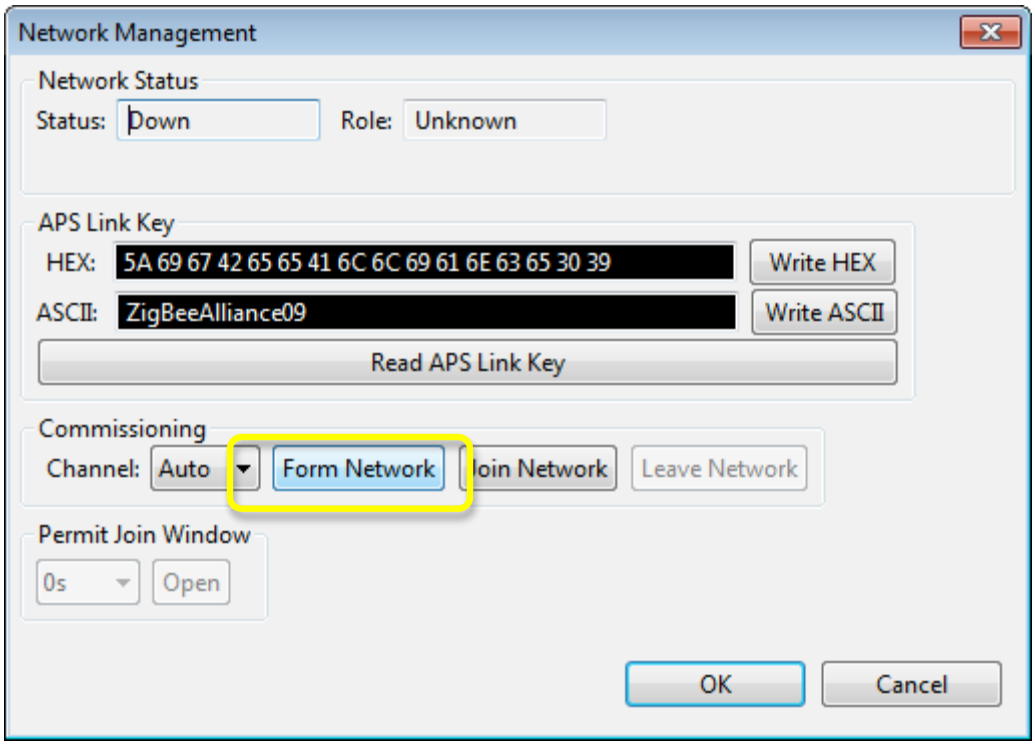
The following instructions will outline how to use the MMB RapidConnect Development Kit to perform a simple ZigBee Home Automation (HA) 1.2 demo.

**Note: the instructions will assume that RapidConnect USB Sticks are being used, but RapidConnect Development Boards can be substituted for the USB sticks and the process will be unchanged, as long as the Windows driver for the Development Board has also been installed.*

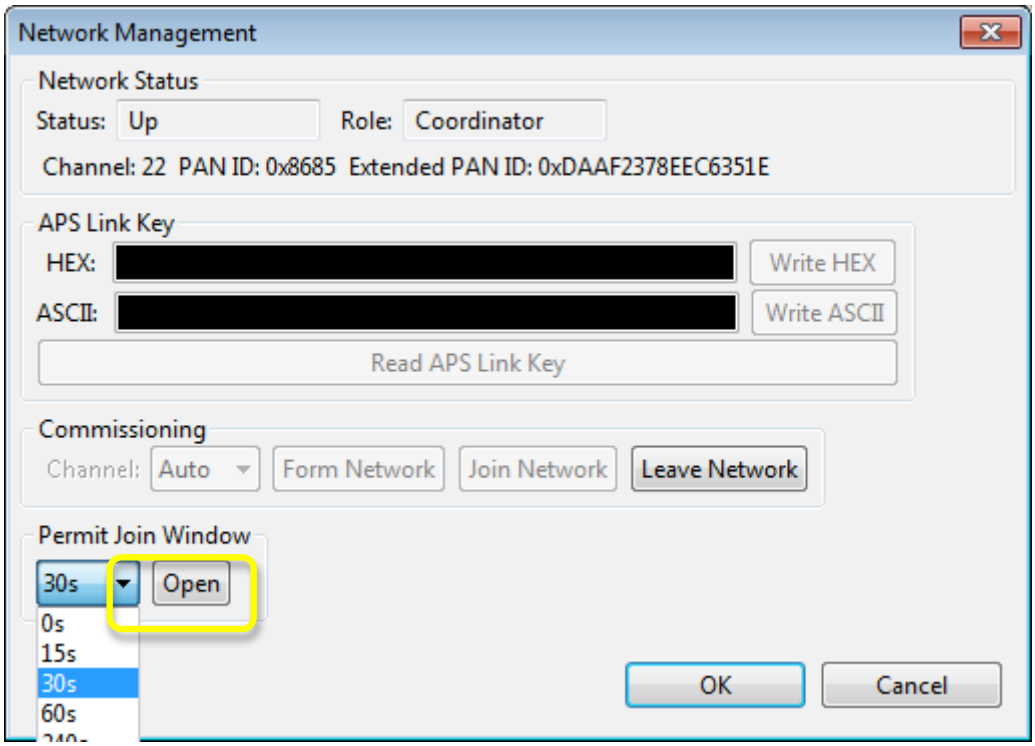
1) Download the RapidConnect USB Stick Driver from the MMB Networks Downloads Page. Unzip the package and install the 32 or 64-bit version of the driver, matching the Operating System version (i.e. 32-bit driver for a 32-bit Operating System).
2) Choose a RapidConnect USB stick to serve as the **Coordinator** and plug it into the computer.
3) Download and launch the RapidHA Desktop installer from the MMB Networks Downloads Page.
4) Once installed, launch the RapidHA Desktop software. Select the COM port corresponding to the RapidConnect USB stick and click **Open**. If this is the first time the RapidConnect USB stick has been used, the **Device Configuration** window will automatically open. If it does not, click **Config**.
5) Configure the RapidConnect USB Stick to serve as a **Coordinator** by completing the following actions:
    - Click **Select**
    - Navigate to "C:\Users\<username>\AppData\Local\Apps\MMB Networks\RapidHA\config"
    - Select "coordinator.xml" and click **OK**



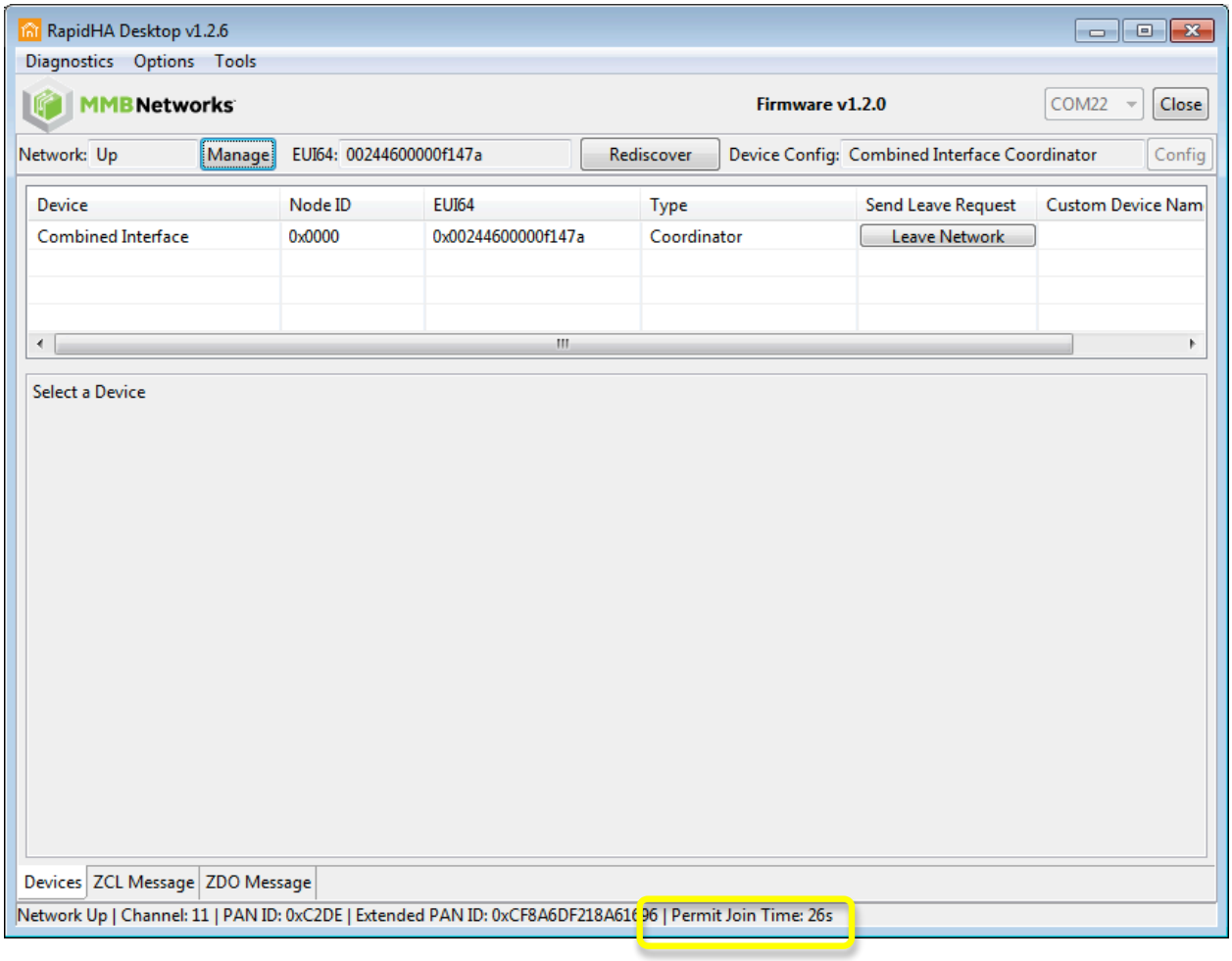
6) Form a ZigBee network by clicking on the **Manage** button and then clicking **Form Network**.



7) Select a **Permit Join Window** from the drop-down box and then click **Open**. Then click **OK**.



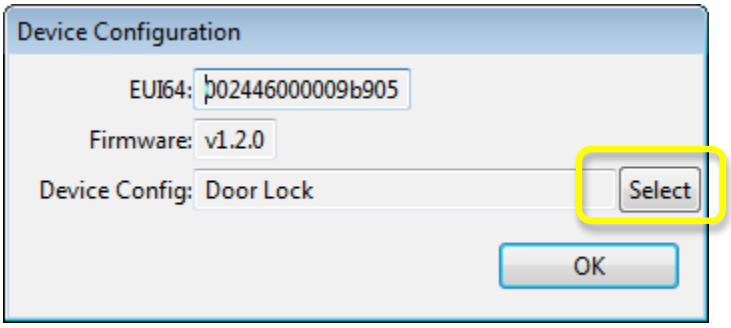
8) The **Coordinator** will now permit other devices to join the ZigBee network for the length of time selected in the Permit Join Window drop-down box. A timer at the bottom of the screen will display the amount of time remaining in the Permit Join Window. If the timer reaches **0s**, Permit Join can be enabled again by clicking the **Manage** button and repeating Step 7.



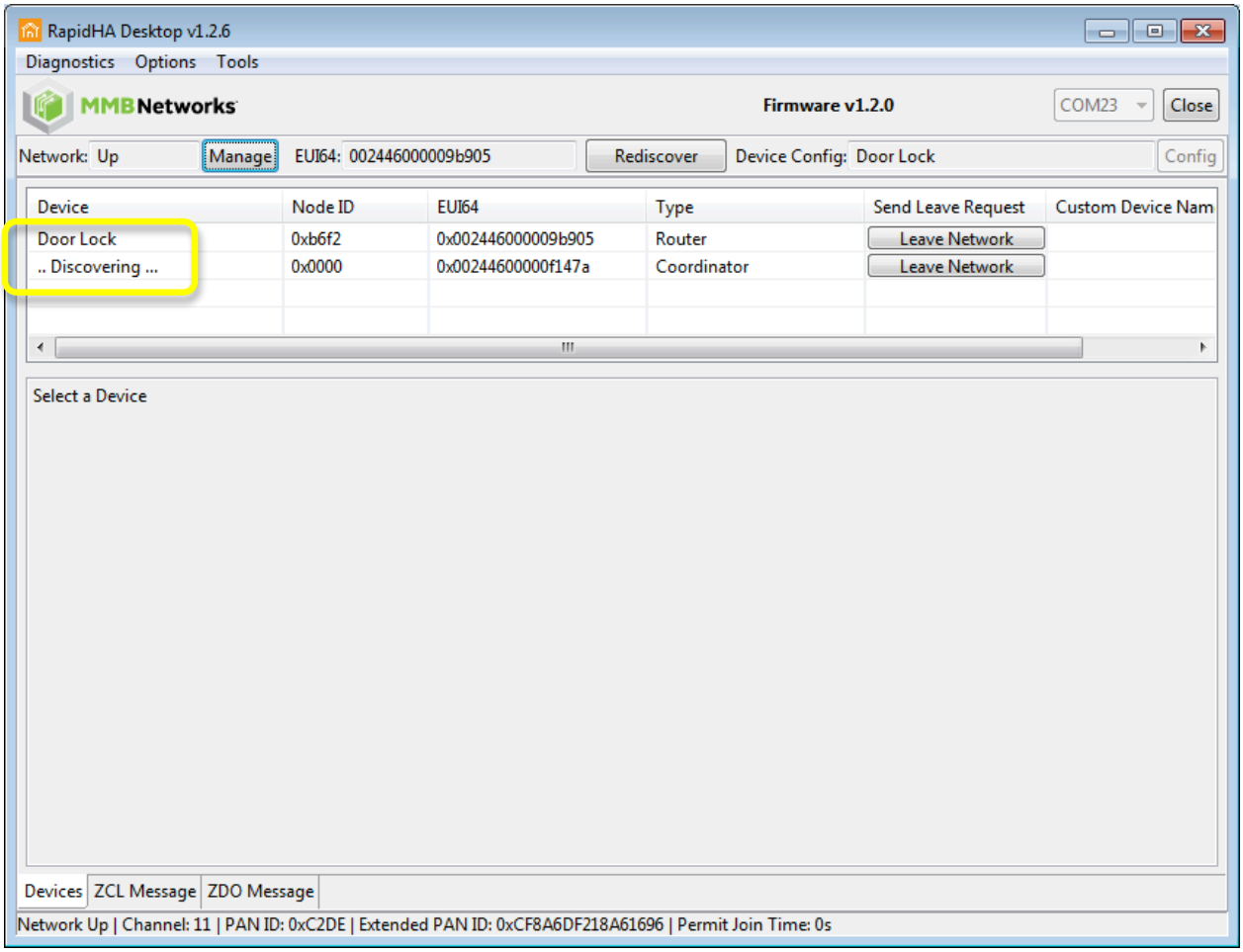
3 Simulating a ZigBee Device Using RapidConnect Hardware

The following instructions will explain the process of using a RapidConnect USB Stick to simulate a Door Lock and join the network that was formed in the previous section. The Door Lock Device Type was chosen for illustration purposes – other Device Types can be simulated by choosing the appropriate xml configuration files. The instructions will require the user to run two instances of RapidHA Desktop; one for a **Coordinator** and one for a **Door Lock**. The instances can be identified by the value that is displayed next to **Device Config** at the top right corner of the RapidHA Desktop window.

1) Select the COM port corresponding to the RapidConnect USB stick and click **Open.** If this is the first time the RapidConnect USB stick has been used, the Configuration Window will automatically open. If it does not, click **Config**.
2) Configure the RapidConnect USB Stick to serve as a **Door Lock** by completing the following actions:
    - Click **Select**
    - Navigate to "C:\Users\<username>\AppData\Local\Apps\MMB Networks\RapidHA\config"
    - Select "doorlock.xml" and click **OK**



3) Now the simulated Door Lock device is ready to join a ZigBee network. Open the **Coordinator** instance of RapidHA Desktop and ensure that **Permit Join** is enabled, as detailed in Step 7 of the "Forming a ZigBee Network" section.
4) Return to the **Door Lock** instance of RapidHA Desktop and click **Manage**.
5) Click **Join Network**, then click **OK**.
6) The Device Table should now display two devices. After the devices complete Service Discovery, they should be labeled as a **Door Lock** and a **Combined Interface**.



4 Sending Commands to ZigBee Devices

There are two ways to configure devices using RapidHA desktop:

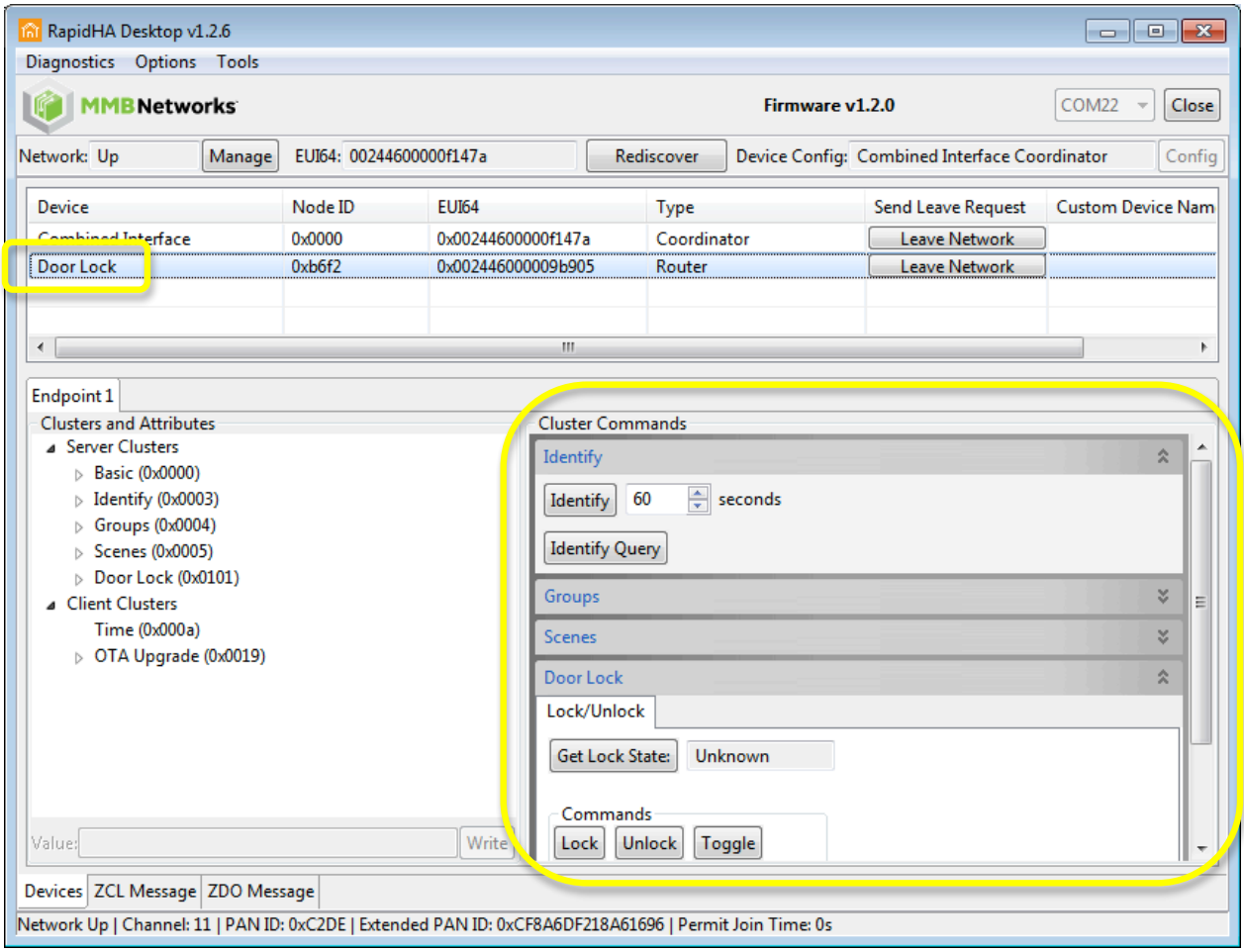
I. Over the ZigBee network, by writing attribute values or sending commands.

II. Locally, by sending serial commands via USB from the PC connected to the RapidConnect hardware.

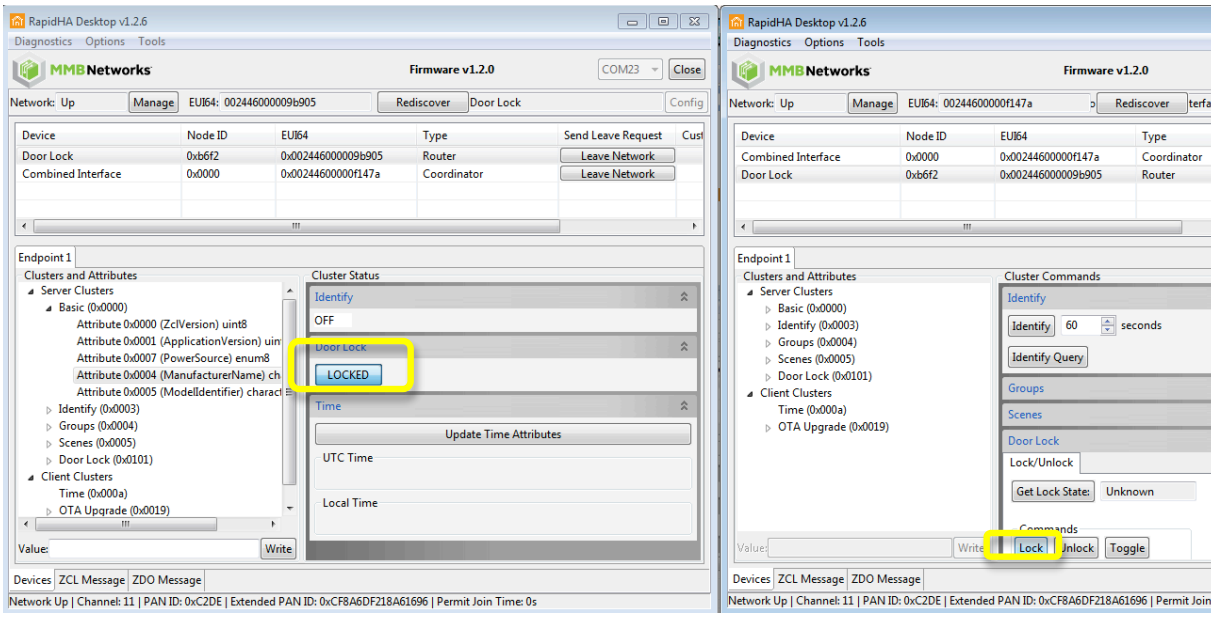
The following instructions will explain each of these methods for configuring devices.

4.1 Sending commands over the ZigBee network

1) Open the **Coordinator** instance of RapidHA Desktop (i.e. the instance that displays the **Combined Interface Coordinator** configuration).
2) In the **Device Table**, click on the **Door Lock** device. This will open the **Door Lock** device interface.

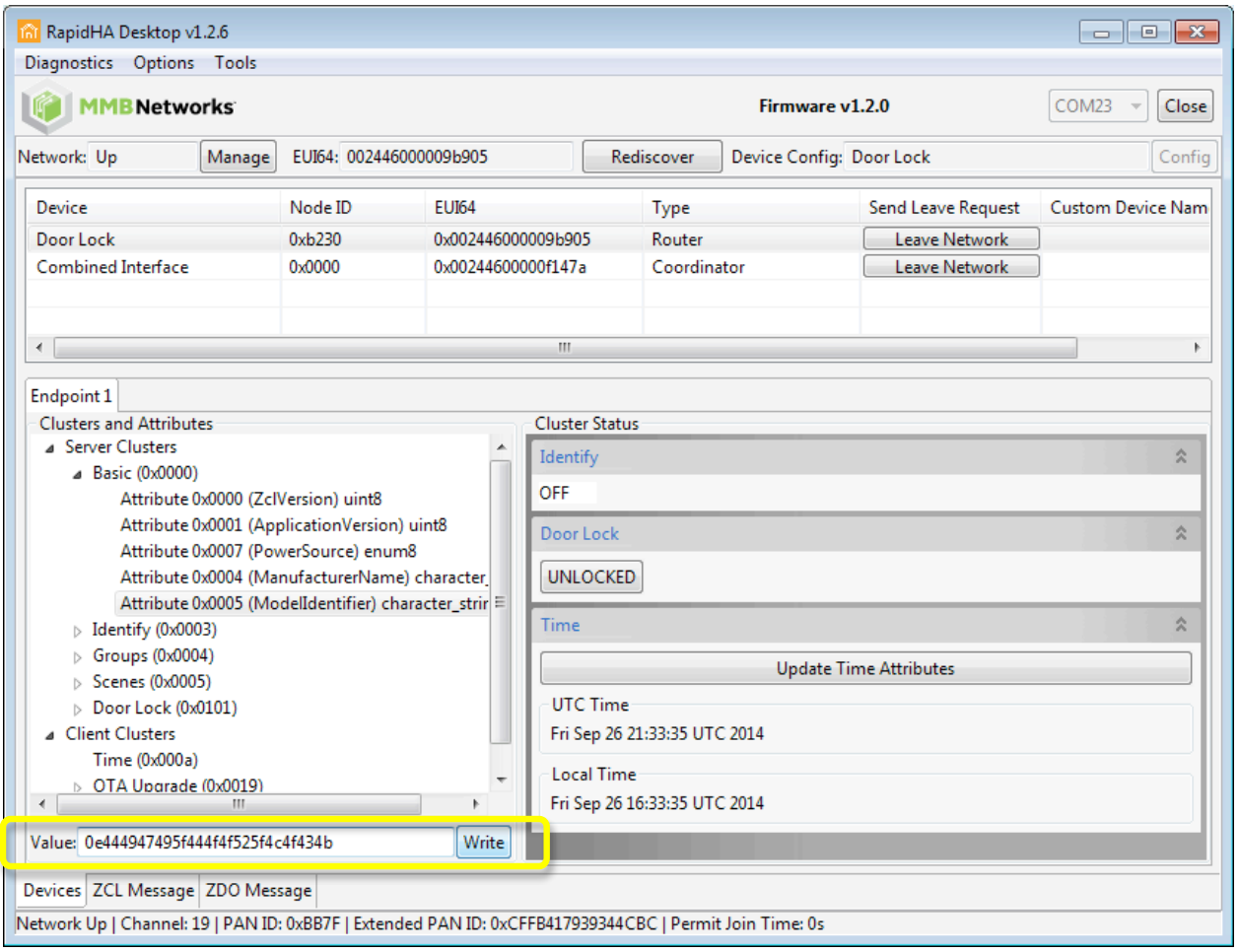


9) Under the **Cluster Commands** listed on the right side, click on the **Door Lock** interface to expand it. This interface will provide facilities for issuing commands to manipulate the Door Dock.
10) The **Get Lock State** button can be used to query the current state of the lock (i.e. **Locked** or **Unlocked**).
11) The **Lock** and **Unlock** buttons will send commands to change the state of the simulated Door Lock. These state updates will be reflected in the Door Lock instance of the RapidHA Desktop software:



4.2 Sending Serial Commands to Configure a Device via USB

1) Open the **Door Lock** instance of RapidHA Desktop and click on **Door Lock** in the Device Table.
2) In the **Clusters and Attributes** window, click on the **Basic** cluster to expand it.
3) Click on **Attribute 0x0004 (ManufacturerName)**. Since this attribute is a **Character String** Data Type, it will accept text entered in hexadecimal format, starting with a Length Descriptor. For example, “MMB_Networks” is represented by the value **0c 4d 4d 42 5f 4e 65 74 77 6f 72 6b 73**. The first byte (**0c**) represents a length of 12 characters, and the remaining bytes represent **MMB_Networks** expressed in hexadecimal form.
4) The values that are written to these attributes are stored in volatile memory. Thus, they will remain as long as the RapidConnect USB Stick is not power cycled.


RapidHA Desktop v1.2.6
Diagnostics
Options
Tools
MMB Networks
Firmware v1.2.0
COM23
Close
Network: Up
Manage
EUI64: 002446000009b905
Rediscover
Device Config: Door Lock
Config
Device
Node ID
EUI64
Type
Send Leave Request
Custom Device Nam
Door Lock
0xb230
0x002446000009b905
Router
Leave Network
Combined Interface
0x0000
0x00244600000f147a
Coordinator
Leave Network
Endpoint 1
Clusters and Attributes
Server Clusters
Basic (0x0000)
Attribute 0x0000 (ZclVersion) uint8
Attribute 0x0001 (ApplicationVersion) uint8
Attribute 0x0007 (PowerSource) enum8
Attribute 0x0004 (ManufacturerName) character_
Attribute 0x0005 (ModelIdentifier) character_strir
Identify (0x0003)
Groups (0x0004)
Scenes (0x0005)
Door Lock (0x0101)
Client Clusters
Time (0x000a)
OTA Upgrade (0x0019)
Cluster Status
Identify
OFF
Door Lock
UNLOCKED
Time
Update Time Attributes
UTC Time
Fri Sep 26 21:33:35 UTC 2014
Local Time
Fri Sep 26 16:33:35 UTC 2014
Value: 0e44494749 5f444f525f4c4f434b
Write
Devices
ZCL Message
ZDO Message
Network Up | Channel: 19 | PAN ID: 0xBB7F | Extended PAN ID: 0xCFFB417939344CBC | Permit Join Time: 0s