Wireless to BACnet/IP Gateway with GW2
Using GW2 as a Wireless ZigBee Pro to BACnet/IP Gateway with VT7000/VT8000 Series Room Controllers
Integration with GW2 Gateway

This document shows how the GW2 integrates wireless solutions to a wired building automation system.

The GW2 is interoperable with any BACnet compliant building management system and can communicate with ZigBee Pro devices. No Software or Server is required. The procedures in the document show you how to integrate the VT7000 and VT8000 Series Room Controllers with the GW2.

The following must be performed to successfully integrate the GW2 with any Room Controller:

1. Login to Building Expert
2. Configure Objects in Building Expert
3. Add VT7000/ VT8000 Series Room Controller
Configure Network Ethernet Adapter

The network must be correctly configured for the PC to function with the suitcase.

1. From Control Panel, open Network Connections (Windows XP) or Network and Sharing Center (Windows 7).
2. Select Internet Protocol Version 4 (TCP/IPv4) and click Properties.
3. Complete dialog box with identical information shown below and click OK.
Login and Configure Building Expert

This procedure shows how to configure Building Expert.

1. Open Browser and enter 10.50.80.3 in address bar.
2. Select Language.
3. Enter User Name (default ‘admin’).
4. Enter Password (default ‘admin’).
5. Click Login.

**NOTE:** For Building Expert version 2.14 and higher, you must the user name and password in the browser before you get to building expert. Then Building Expert loads again and prompts you to enter a new password.
Ethernet Settings

This procedure shows you how to change the IP address on the GW2.

1. In Explorer tab, select Ethernet Configuration Object.
2. In DNS field, enter DNS for GW2.
3. In Gateway field, enter Gateway for GW2.
4. In IP field, enter IP for GW2.
5. In Netmask field, enter Netmask.
6. Click Save.

**NOTE:** if the GW2’s IP address changed, you must log back in to Building Expert using the new GW2 IP address. Also, you may have to change the IP address on your PC to match the new subnet of the GW2.
BACnet Configuration

1. In Explorer tab, select BACnet Configuration Object.
2. In Network Number field, enter Network Number.
   NOTE: The network number of the GW2 CAN NOT be the same as the network number attached to the BACnet controller.
3. In Protocol field, enter Ethernet or BACnet IP.
   NOTE: If using BACnet IP, you must also specify the port number.
4. In Priority Default field, enter Priority Default.
   NOTE: The priority default is the write priority at which the points within the GW2s network will be updated on a remote BACnet system. The GW2 will only support one level of priority array for all the objects in its network.
5. Click Save.

![BACnet Configuration Image]
Controller Settings

1. In **Explorer** tab, select **Controller Settings** Object.
2. In **Date Configuration** dialog box, click **Adjust Time**.
3. Set desired date.
4. Set desired time.
5. In **Time Zone Offset** menu, select correct time zone.
6. Toggle **Enable DST** if your region observes daylight savings time.
7. In **Save Period** field, select desired period (hourly, daily).
   
   **NOTE:** The Save Period is the frequency at which the database is automatically backed up to the storage card of the controller.
8. Click **Save**.
ZigBee Settings

This procedure shows you how to create the ZigBee network that will be used by the Room Controllers.

1. Select **ZigBee Configuration Object (ZBC1)**.
2. Toggle **Edit Settings**.
3. Set Node Type to **Coordinator**.
4. Set **Channel** to desired channel (recommended channels 15, 20 and 25).
5. Ensure **Permit Join Broadcast** is toggled.
6. Set **Extended Network ID** (up to 8 alpha-numeric characters).
7. Set **PAN ID (dec)** field to value between 1 - 500.
8. Set **Stack profile** to ZigBee Pro.
10. Click **Save**.

**NOTE:** write down channel number and PAN ID number and keep in a safe place. These values will be needed when pairing the room controllers to the GW2.

**NOTE:** if using multiple networks, the following parameters must be unique on each network:
1. Channel
2. Extended Network ID
3. PAN ID (dec)
Room Controllers

This section shows you how to add VT7000/VT8000 Series Room Controllers as well as how to integrate them with the GW2.

**Note**
The below example applies to the VT7200 series room controller. Refer to the installation manual of your room controller model for the exact key sequence used to navigate the various menus on the room controller.

**Configure VT7000 Series Room Controllers**

1. Press and hold **OVERRIDE** for approximately eight seconds until **PaswrID** shows.
2. If password is required, using Up or Down arrow button, set Password to any value between 0 - 1000.
   
   **NOTE:** only set password if necessary. Otherwise leave at 0.
3. Push **OVERRIDE** after Password is set.
4. Press **OVERRIDE** until **PAN ID** shows.
5. Using Up or Down arrow button, set **PAN ID** to match value set in GW2.
6. Push **OVERRIDE** after **PAN ID** is set.
7. Push **OVERRIDE** until **Channel** shows.
8. Using Up or Down arrow button, set Channel to match channel set in GW2. Push OVERRIDE after Channel is set. Record Channel value for later use.
9. Press OVERRIDE until COM Address shows.
10. Enter COM Address value.
   NOTE: The COM address is a unique identifier for the Room Controller and is used to facilitate commissioning. Also, each device must have a unique number.
11. Push OVERRIDE after COM Address is set. Record COM Address value for later use.
Configure SE8000 Series Room Controllers

1. In top-middle area of room controller, press and hold this point for 3 seconds to enter setup mode.

2. Tap **Network**.

![Press and hold](image)
3. Tap **COM address**.
4. Using Up or Down arrow button, enter COM address value.
   **NOTE:** The COM address is a unique identifier for the Room Controller and is used facilitate commissioning. Also, each device must have a unique COM address.
5. Tap **ZigBee Pan ID**.
6. Using Up or Down arrow button, enter the **PAN ID (dec)** value from the GW2 to the **ZigBee Pan ID** field of the room controller.
7. Tap **ZigBee channel**.
8. Using Up or Down arrow button, enter the channel value from the GW2 to the **ZigBee channel** field of the room controller.
9. Tap **Home icon**.
   **NOTE:** the ZigBee status shows “Joined” after the room controller successfully connects to the ZigBee network. This may take a few minutes.

![1/3 Zigbee Network Table]

<table>
<thead>
<tr>
<th>Com address</th>
<th>254</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node type</td>
<td>Router</td>
</tr>
<tr>
<td>Zigbee Pan ID</td>
<td>0</td>
</tr>
<tr>
<td>Zigbee channel</td>
<td>10</td>
</tr>
<tr>
<td>Zigbee short</td>
<td>0x0000</td>
</tr>
<tr>
<td>Zigbee status</td>
<td>No NWK</td>
</tr>
</tbody>
</table>
Add Device to GW2

This procedure shows you how to add a Room Controller to the GW2.

1. In Explorer tab of Building Expert, click Add Device button. A new window opens.
2. Select Device you want to add.
   **NOTE:** You must add the same Device model from the Device list which is identical to the model number of your Device. This number is shown on the packing box.
3. Click Add Devices. Building Expert automatically adds Device to your GW2.
   **NOTE:** Click multiple times until 'Count' increments to the amount of devices you want to add if you are adding multiple devices of the same model.
Bind and Configure Device

1. In **Devices** pane, select newly added Device.

![Devices](image)

2. In **Object** field of Explorer tab, select **ZigBee Room Controller Config**.

3. Push **Bind**. A new window opens and **Building Expert** searches for the Com Address and Extended Node ID for your device.

![ZigBee Room Controller Configuration](image)
4. From **Select** device window, select the device to bind with GW2.

5. Click **Bind device**.
Assign Device Data Points

1. In Object field of Explorer tab, select ZigBee Room Controller Config.

2. Toggle any box under Controller object to assign any Device data point up to a maximum of 60.
2. In COV field, toggle any data set point you want to have poll GW2 whenever Device has change in present value up to a maximum of 20 per device.

**NOTE:** The GW2 polls a point at a regular interval unless COV is checked. When COV is checked, the Room Controller sends (pushes) updated values back to GW2 whenever they change. Also, adding COV on points that change frequently creates more traffic on the network.
Commission BACnet/IP Front End with JACE

This procedure shows an example on how to commission the Tridium Jace BACnet Controller with the GW2.

1. Launch Workbench.
2. In Open Platform dialog box, enter IP address of your BACnet Controller.
   NOTE: The IP address used in this procedure is an example. Use the IP address of the BACnet Controller or similar.
3. In Port field, enter port.
4. In Username field, enter username.
5. In Password field, enter password.
6. Click OK.
7. On BMS click Discover.
8. Do the following to Networks:
   i. Untoggle Network number set for the GW2.
      NOTE: In example below, 171 represents the GW2 network. If the GW2 network number stays checked, the devices will still get discovered, however there will be duplicates. Make sure to untoggle this.
   i. Toggle AX IP network number.
      NOTE: in example below, AX IP number is 1.
   i. Peform no action to AX MS/TP network number.
      NOTE: in example below, AX MS/TP network number is 300. This number has no impact on desired result.
6. Click OK.
Troubleshooting

GW2

Refer to the below for basic GW2 Troubleshooting measures.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>MITIGATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device not working correctly</td>
<td>Device not bound to GW2</td>
<td>Click on device in Building Expert and ensure device is bound to GW2. A small red 'X' shows if device is not bound to GW2. Use Building Expert to bind device to GW2.</td>
</tr>
<tr>
<td></td>
<td>Device not bound to ZigBee network</td>
<td>Use Building Expert to ensure ZigBee network is active.</td>
</tr>
<tr>
<td></td>
<td>PAN IDs do not match</td>
<td>Ensure PAN ID for Room Controller is set to same values as PAN ID of GW2.</td>
</tr>
<tr>
<td></td>
<td>Channel IDs do not match</td>
<td>Ensure Channel ID for Room Controller is set to same values as Channel ID of GW2.</td>
</tr>
<tr>
<td></td>
<td>Device configuration not set correctly</td>
<td>Use Building Expert to ensure device configuration is set to '0'.</td>
</tr>
<tr>
<td></td>
<td>Problem with ZigBee module</td>
<td>Remove Room Controller cover and ensure ZigBee module is blinking. Ensure ZigBee module is securely affixed in Room Controller. Replace ZigBee module if damaged.</td>
</tr>
</tbody>
</table>

Room Controller

Refer to the below for basic ZigBee Pro module Troubleshooting measures.

<table>
<thead>
<tr>
<th>ZIGBEE PRO MODULE LED INDICATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x (200ms) short blink</td>
</tr>
<tr>
<td>2 x (200ms) short blinks</td>
</tr>
<tr>
<td>3 x (200ms) short blinks</td>
</tr>
<tr>
<td>4 x (200ms) short blinks + 1 x (150ms) long blink</td>
</tr>
</tbody>
</table>

System Troubleshooting Recommendations

1. If a Room Controller is not detected by a GW2, verify the LED is blinking at least 4 times. If it is only blinking twice, ensure the PAN ID and Channel values of the Room Controller are set to the same value as the GW2 for which it communicates.
2. When commissioning a network, it is recommended to use Channels 15 or 25, and to alternate these Channels between floors.
3. If a particular Room Controller refuses to join the network and cannot be detected by the GW2, move (momentarily) the Room Controller closer to the GW2 until it joins the network and gets added to the database. Once joined, move the Room Controller to the desired location.