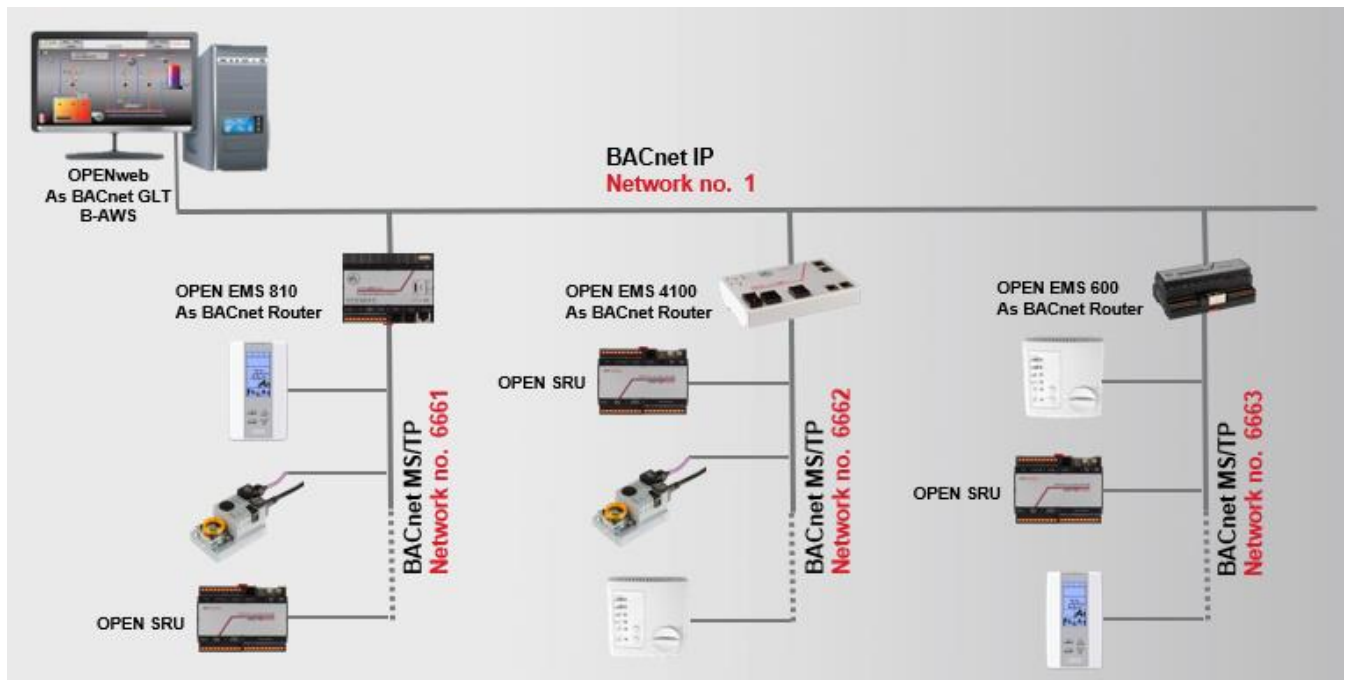# TT211102 – OPENview - Multiple BACnet MSTP

1. In many BACnet projects, you will have multiple BACnet MS/TP networks, each connect to a OPEN controller (acting as a BACnet router), and then through the BACnet IP network to the OPENweb server, like below.


2. In this document, we will show you how the setup the BACnet settings in OPENview for the above system. First, let's take a look at the BACnet network number setting.
3. In the above example, we have 4 BACnet networks. The first is the BACnet IP network with network number 1, and 3 BACnet MS/TP networks with number 6661, 6662 and 6663.
4. In the OPEN controller, the default BACnet IP network number is 1. All controllers connect to the BACnet IP network will have the same BACnet IP network number setting, so you can keep the default unchanged in all controllers.
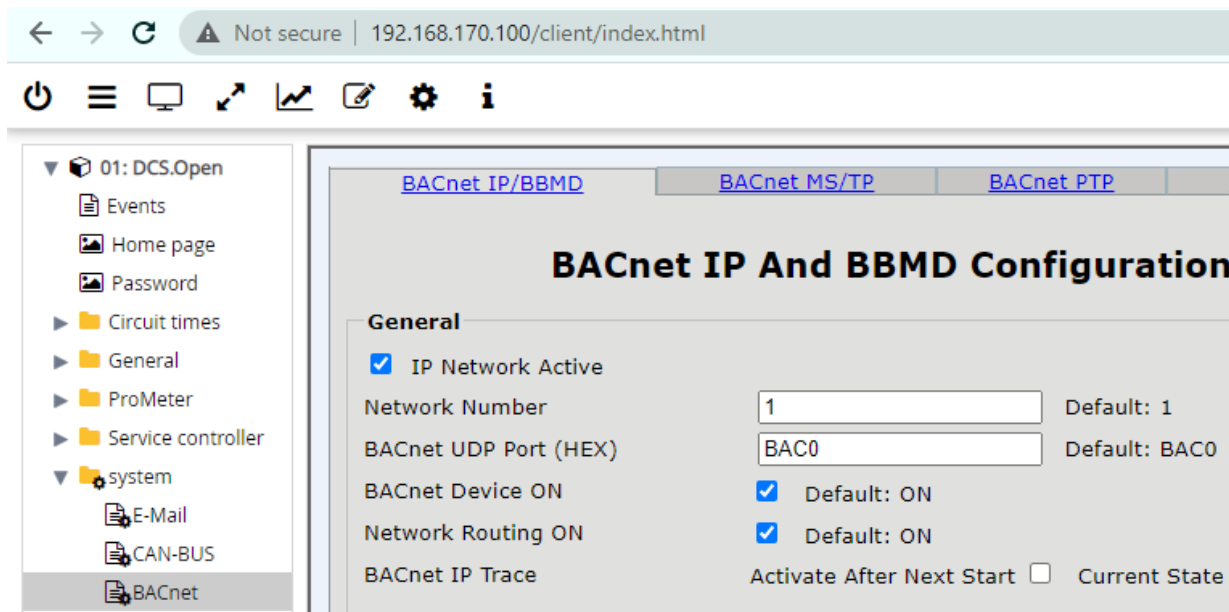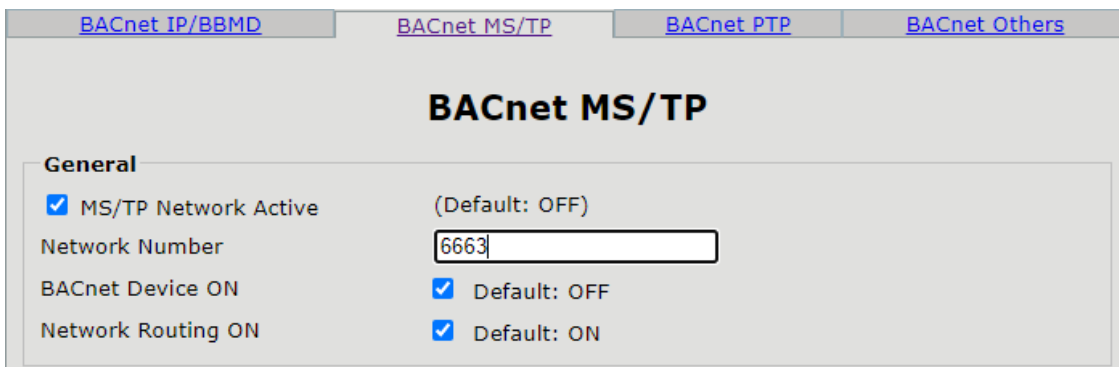

5. Please note that each BACnet network (BACnet IP, BACnet MS/TP, etc.) must have a unique BACnet network number. Since we've used network number 1 for the BACnet IP network, then we've to use other network number for each BACnet MS/TP network.

6. The default network number for the BACnet MS/TP in our controller is 6661. So, for the first controller, you can leave it unchanged.
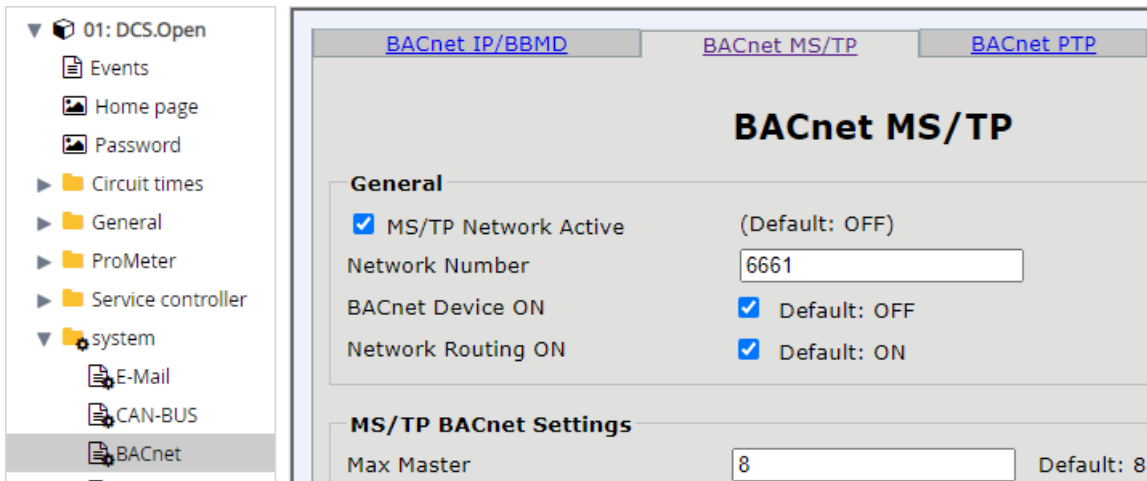
7. For the 2nd controller, change it to 6662, and then change it to 6663 for the 3rd controller. You can use any number you like, just make sure all of them are unique.

8. Please note that you've to change the number before you enable the MS/TP network in the controller. Otherwise, it may affect your existing BACnet communication.
9. The next setting is the "MAC address". For each BACnet MS/TP device, there is a unique MAC address. The MAC address normally starts from 1 (which is the default MAC address in our OPEN controller), and therefore the other devices normally start from 2, and then 3, etc.
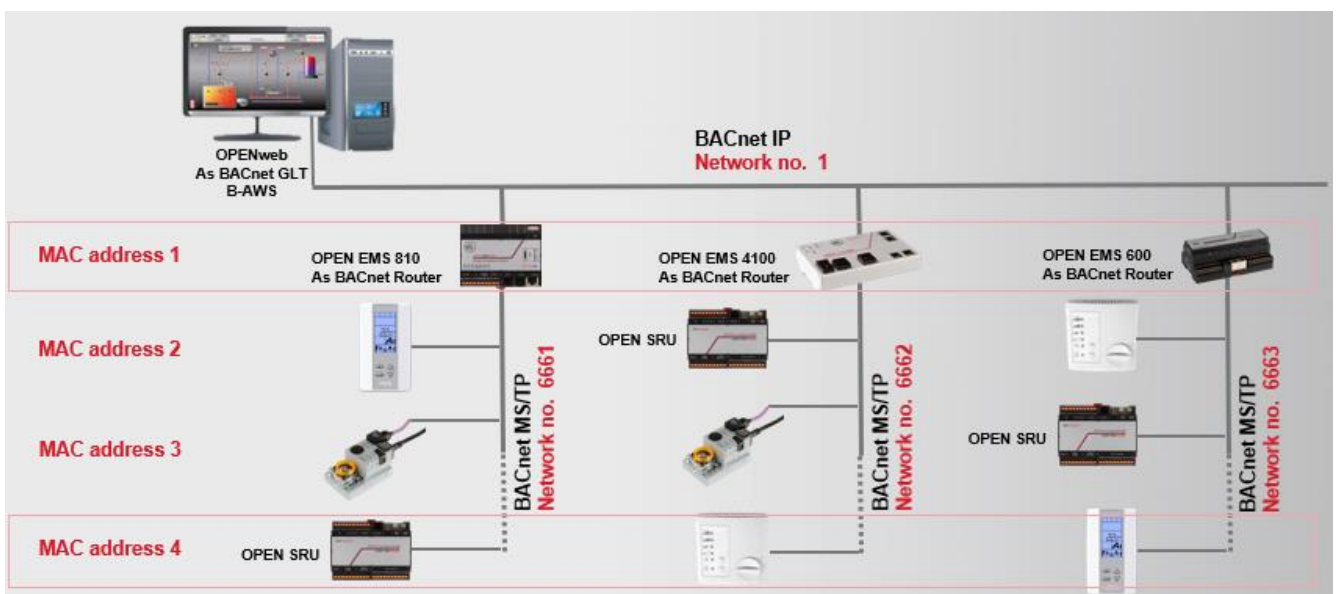
10. The MAC address for each device must be unique in each MS/TP network ONLY. So, we can have same MAC address 1 for all OPEN controllers, and then 2, 3, etc. for the BACnet devices.

11. For example, this is the settings for the 2nd OPEN controller.

12. Please refer to the datasheet (or manual) of your BACnet device on how to set the MAC address. For example, there is an addressing switch in OPEN SRU, it accepts the MAC range between 1 to 99.

13. The last setting is the BACnet device ID. Each BACnet device must have a unique BACnet device ID across the whole network. This is an example of the BACnet device ID of each BACnet device.
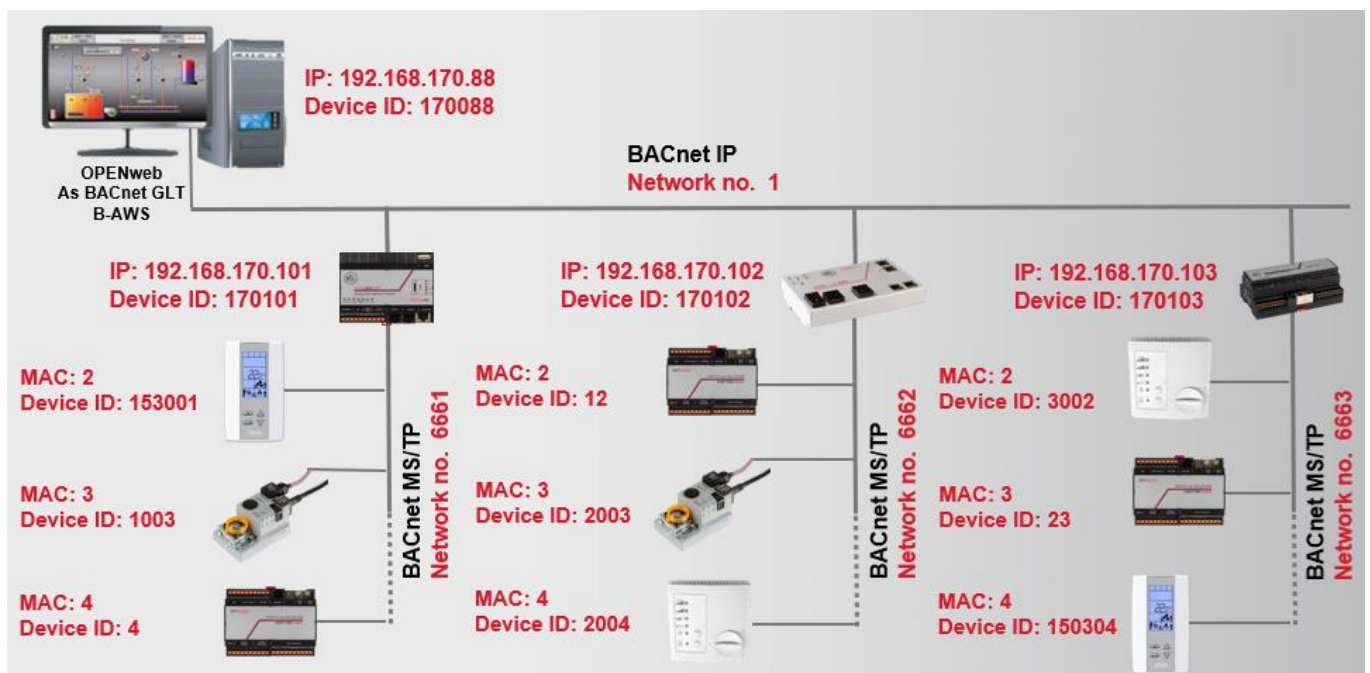
14. The BACnet device ID of the OPEN controller is set automatically in FUP. It is the last 2 octal value of the IP address. For example, an OPEN controller with IP address 192.168.170.101 has BACnet device ID of 170101. This can help to ensure the ID is unique across the whole network.

15. You can change it manually by typing the "New Device ID" below (see above picture). Please remember to click "Save Changes" at the bottom after any changes of BACnet settings, and restart the BACnet process to active the new settings.

16. The BACnet device name for the OPEN controller are also set automatically in FUP based on the IP address. It is also suggested to have unique BACnet device name for each BACnet device across the whole BACnet network.
17. Please refer to the datasheet (or manual) of your BACnet device on how to set the BACnet device ID (or BACnet device instance number). For example, this is the DIP switch of the BACnet FCU controller (DEOS DS-FCU-T0V240) and the default BACnet device ID

BACnet Address DIP Switch (DS2)

MSTP/MAC address for communication, are selectable by DIP switch using binary logic. If you do not change device instance in programme mode, it will be automatically modified according to the MAC address.

MAC Address	DS.1 = 1	DS.2 = 2	DS.3 = 4	DS.4 = 8	DS.5 = 16	DS.6 = 32	DS.7 = 64	DS.8 = 128	Default Device Instance
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	153000
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	153001
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	153002
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	153003
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	153004
…	…	…	…	…	…	…	…	…	…
126	OFF	ON	ON	ON	ON	ON	ON	OFF	153126
127	ON	ON	ON	ON	ON	ON	ON	OFF	153127

18. Follow the procedure below to manually set the device ID of the FCU.
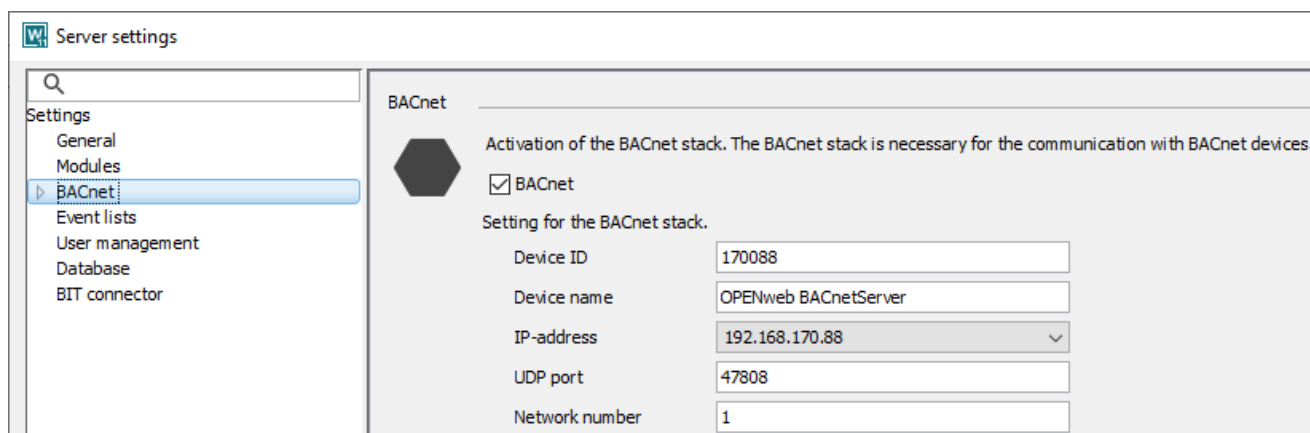
Manual Setup

To use a **Device_Instance** other than 153,000, and /or if your site has more than one controller network, go to the menu.

1. Press menu, select the Controls menu item and enter the password.
2. Select the BACnet menu item to configure the MAC address, Max Master, Device Instance, and Baud Rate manually.
3. Disconnect the power to the controller, connect the controller to the network, and connect the power again.

19. Please note that for proper BACnet IP communication, the subnet and the subnet mask of all the BACnet IP devices must be the same (e.g. 255.255.0.0 or 255.255.255.0, etc.). It won't communicate if the subnet or subnet mask is different from each other.
20. The default network UPD port for BACnet communication is 47808 (BAC0 in hex). Please don't change it.

21. If OPENweb need to access the BACnet devices (e.g. BACnet EDE export), you need to configure it in OPENweb as well. Below is an example of the settings for your reference.
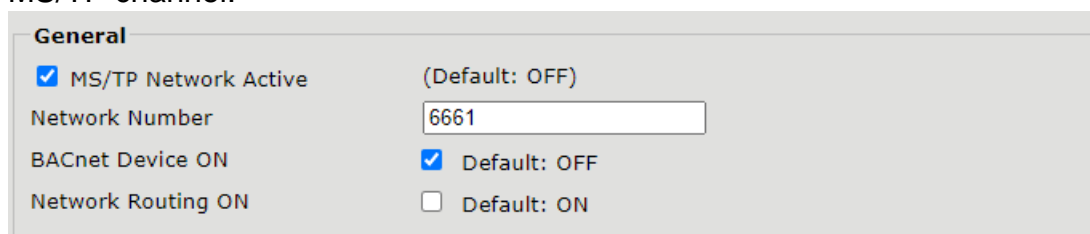
22. Sometimes it is difficult to make sure all BACnet devices have unique device ID across the whole network (especially for big project). For most of our projects, we use the OPEN controller as a BACnet gateway and already mapped all the necessary BACnet objects in FUP, then you may want to disable the "Network Routing ON" option after the commissioning of the BACnet MS/TP channel.

23. This will block the routing of BACnet MS/TP to BACnet IP. By doing this the BACnet communication will be more stable (and more secure) because no other BACnet device on the BACnet IP network can access these MS/TP devices anymore.
24. By doing this, you don't need to worry about the BACnet device ID anymore, because all MS/TP channels are now become "standalone", so you only need to keep the device ID unique in each MS/TP network ONLY (just like the MAC address).