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Distribution: LHA development, Rickard engineering, Rickard support
Topic: Auto-zone operation

Description:

Auto-zoning is when a diffuser will assume a zone number on power-up without being commissioned by mlm Tool. This document describes how to set-up the diffusers for auto-zone and how to remove the auto-zone when the network is to be mapped to a BACnet BMS.

Application:

Auto-zoning is applicable where a diffuser network needs to be installed without commissioning. Each diffuser will operate as a 'master' diffuser, independent of the other diffusers installed on the same network. Therefore for correct operation, each diffuser should have a 'master' node installed, either a wallstat or an onboard-master (OBM) or both. Note if both master nodes are installed on a diffuser, the wallstat master parameters will take preference re setpoint, RT and changeover values. The same network limitations on a PSU level apply as for a standard mlm network installation.

The auto-zone number is a non-volatile parameter, i.e. it gets issued anew each time the network powers up, as opposed to the fixed zone number when the network is commissioned by mlm Tool. It is therefore important that auto-zone enabled diffusers are not mixed with fixed zone diffusers on the power pack level. If an auto-zone diffuser node detects a fixed zone diffuser on the same network it will back-off to the idle state. It is also important to note that zone numbers can shift with auto-zoning, therefore if a BACnet BMS is to be connected the auto-zoning should be changed to fixed zoning first.

Setting up:

The following software/ firmware or later revisions are applicable:

- Mlm Tool – update_8_17_U12.02
(For auto-zoning setup the Auto-Zoning [67] command is added to the data descriptor file)
- Diffuser Controller – V06.29

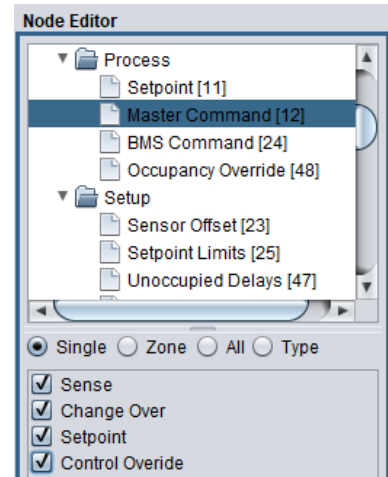
Auto-zoning could be either setup at the factory or manually as explained herewith. The factory set diffusers will all be populated with OBM nodes with sense, changeover and setpoint enabled. Therefore these auto-zoned diffusers will all be master diffusers. Diffusers pre-set for auto zoning will be clearly marked at the factory as such.

Manual setup:

Assemble the diffuser network at the PSU level. Make sure OBMs are populated where wallstats are not to be connected in the final installation. Power up and connect to the network with the mlm Tool. It is assumed the user is familiar with mlm Tool operation.



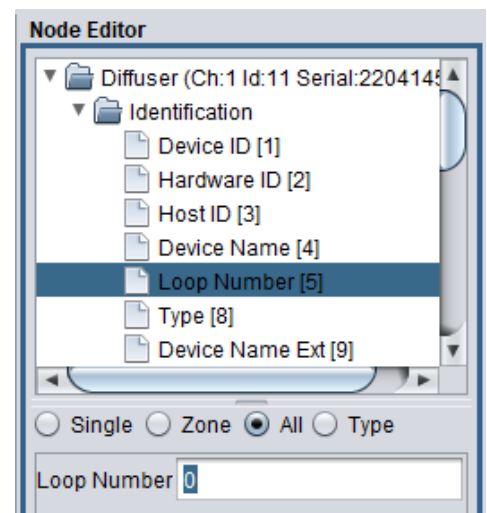
Select the Node List tab and verify that all the required OBM's are visible. In the Node Editor ensure all the operational settings such as Setpoint, Master command and Occupancy settings are in place for each individual OBM where applicable.



In the node list screen verify all diffusers are on zone '0' and the correct firmware revision is loaded:

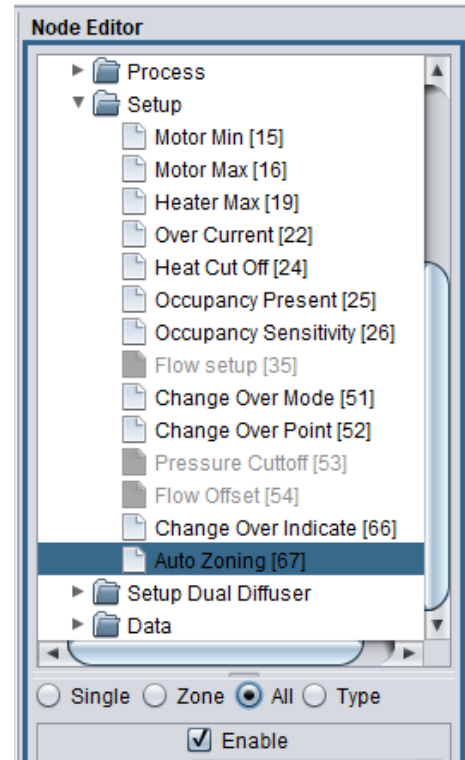
PHYSICAL LOGICAL NETWORK NODE LIST								
Com...	Ch	Type ▲	Zo...	Code	Serial Nr	Har...	Fir...	Dev
Pending 1		Diffuser	0	BT20	21111219	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111380	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111383	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111384	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111385	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111386	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111387	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111388	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111390	7.7	06.29	
Pending 1		Diffuser	0	BT20	21111394	7.7	06.29	a
Pending 1		Diffuser	0	BT20	21111501	7.7	06.29	b
Pending 1		Diffuser	0	BT20	22041454	7.7	06.29	c
Pending 1		Diffuser	0	BT20	22080100	7.7	06.29	d
Pending 1		Diffuser	0	BT20	22080120	7.7	06.29	
Pending 1		On-board Master	0	BT21	16100948	5.6	03.15	
Pending 1		On-board Master	0	BT21	21060575	5.6	03.15	
Pending 1		On-board Master	0	BT21	21060578	5.6	03.15	
Pending 1		On-board Master	0	BT21	21060583	5.6	03.15	
Pending 1		On-board Master	0	BT21	21060594	5.6	03.15	
Pending 1		On-board Master	0	BT21	21080239	5.6	03.15	

If all the diffusers are not on zone '0', select any diffuser line in the Node List tab to activate the Node Editor panel. In the Node Editor panel under the Identification/Loop number field enter '0'. Select the 'all' button and press write. The Node List table will now update and after a minute will show the zones all '0'.





Next up select a diffuser again and in the Node Editor panel under Setup select the Auto Zoning (67) tab. Tick the Enable box, the 'all' button and press write.

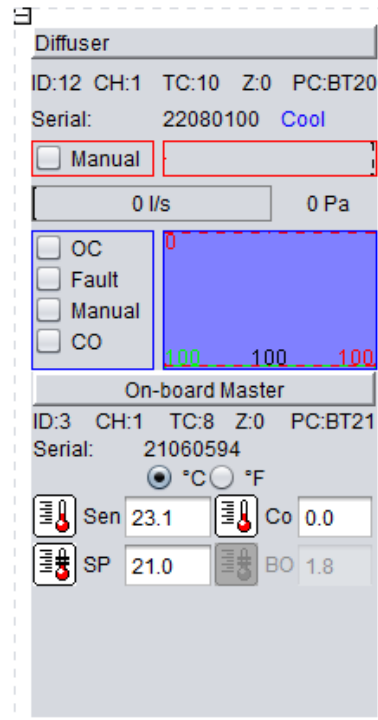


In a minute the Node List will update to show the Zone numbers allocated from '1' on sequentially.

Com...	Ch	Type ▲	Zo...	Code	Serial Nr	Har...	Fir...	De
100%	1	Diffuser	1	BT20	21111219	7.7	06.29	
100%	1	Diffuser	2	BT20	21111380	7.7	06.29	
100%	1	Diffuser	3	BT20	21111383	7.7	06.29	
100%	1	Diffuser	4	BT20	21111384	7.7	06.29	
100%	1	Diffuser	5	BT20	21111385	7.7	06.29	
100%	1	Diffuser	6	BT20	21111386	7.7	06.29	
100%	1	Diffuser	7	BT20	21111387	7.7	06.29	
100%	1	Diffuser	8	BT20	21111388	7.7	06.29	
100%	1	Diffuser	9	BT20	21111390	7.7	06.29	
100%	1	Diffuser	10	BT20	21111394	7.7	06.29	a
100%	1	Diffuser	11	BT20	21111501	7.7	06.29	b
100%	1	Diffuser	12	BT20	22041454	7.7	06.29	c
100%	1	Diffuser	13	BT20	22080100	7.7	06.29	d
100%	1	Diffuser	14	BT20	22080120	7.7	06.29	



In the 'physical' screen the diffusers can now be observed to revert to an active controlling state such as heating or cooling. Note the zone number on the icon will still be indicated as Z0, as the mlm Tool first needs to be synchronised to update this information on the graphic display.



Should the diffuser network now be reset or power-cycled, the mlm Tool will show a zone conflict, as the online and offline projects now differ in zone numbers.



Online = Z1, Offline = Z0



Online = Z2, Offline = Z0



Online = Z3, Offline = Z0

The Node List tab displays current diffuser data, whereas the other (graphic) tabs will show data in combination with project (historical) data. Therefore to avoid confusion, it is recommended that during this Setting up procedure the user only use the Node List display and ignore the other tabs. It is also recommended that the mlm section used for the auto-zone setup be deleted afterwards as the zone information in the auto-project is not relevant anymore.

Installation:

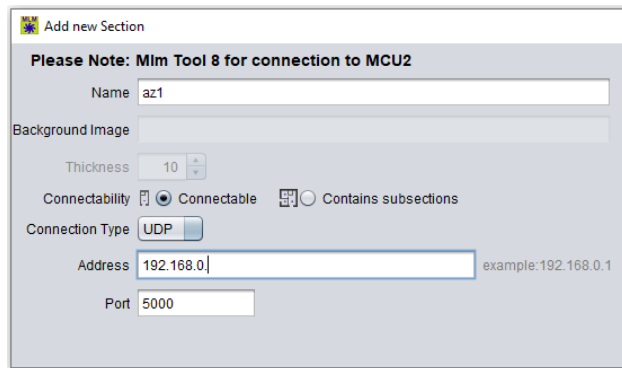
For the site installation the same care should be taken to follow cabling and placement rules as for a standard mlm installation. As there is no mlm Tool to verify setup and operation, the installer could observe the plate position for the correct heating and cooling states of operation. If a wallstat is in use this could be easily done by adjusting the setpoint. Please take note of the **Application** section in this document.



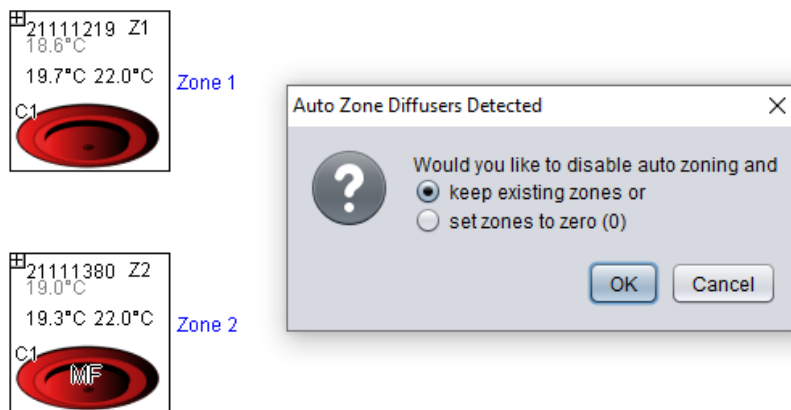
Zoning auto-zoned diffusers for connection to a BACnet BMS network:

This section describes the two mlm Tool built-in options to remove the auto-zoning, as well as how to manually remove the auto zoning if an older revision mlm Tool is in use. Note the auto-zone feature is intended for basic site installations without using the mlm Tool. It is therefore recommended to disable auto-zoning when the mlm Tool detects auto-zoned diffusers.

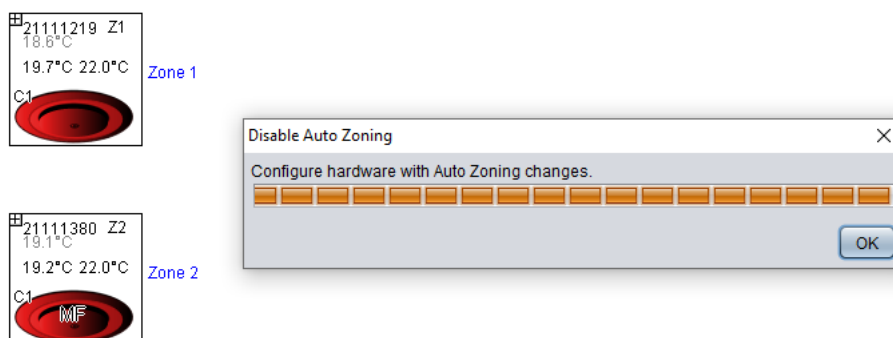
To start, create a new section for the diffuser network in the mlm Tool and connect to that section.



The mlm Tool will detect the auto-zone network and display the following dialog. The installer now has three options – disable auto-zone but keep the existing zones (recommended), disable auto-zone and set all zones to zero, or to retain the auto zoning.

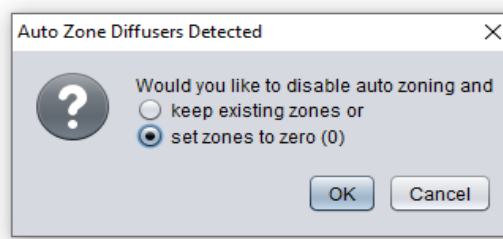


If **option one** is selected the zone numbers will now be saved as fixed zones on the diffusers with auto-zoning disabled. The installer can now use the section editor to make zoning changes such as master/slave setup as required.

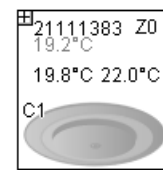
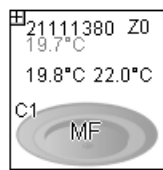
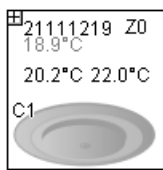




Selecting **option two** will set all the zones to zero.



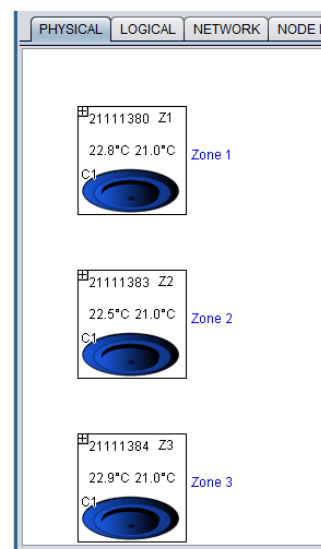
Note when the section is first connected, zone information is collected and retained in the mlm Tool (Auto project). It is therefore recommended that when this option is selected, rather delete the section once the command is completed and start with a new section for further zoning & setup. Using the same section will just show up conflict zone data which will have to be removed by the section editor.



The **third option** is to press cancel and thus retain the auto-zoning function. This option can be used to change setpoint values without re-zoning.

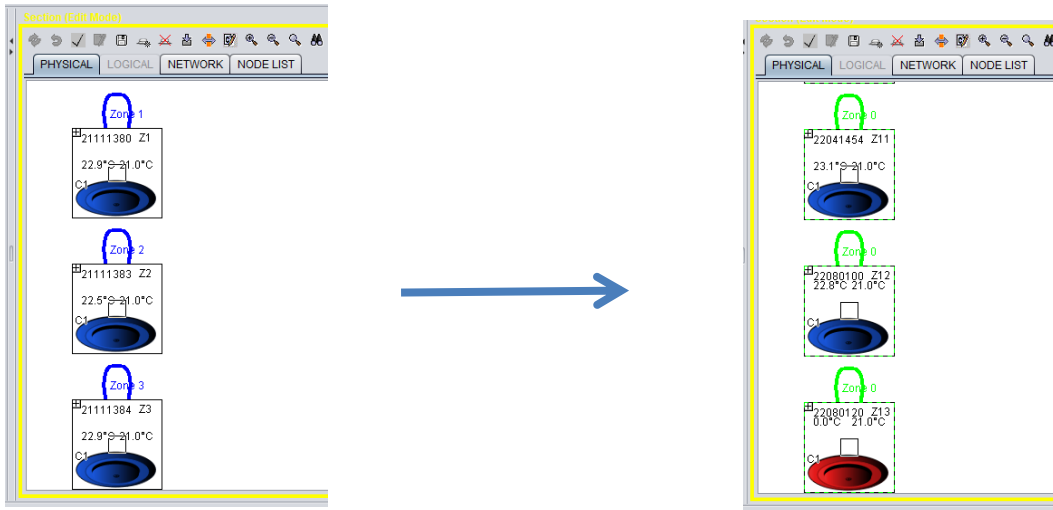
The following procedure describes how to manually remove auto-zone and re-zone diffusers. **This procedure must be followed if an older revision mlm Tool is in use.**

Step 1 - Select the physical tab. Observe the sequential zone numbers for the number of diffusers in the section.

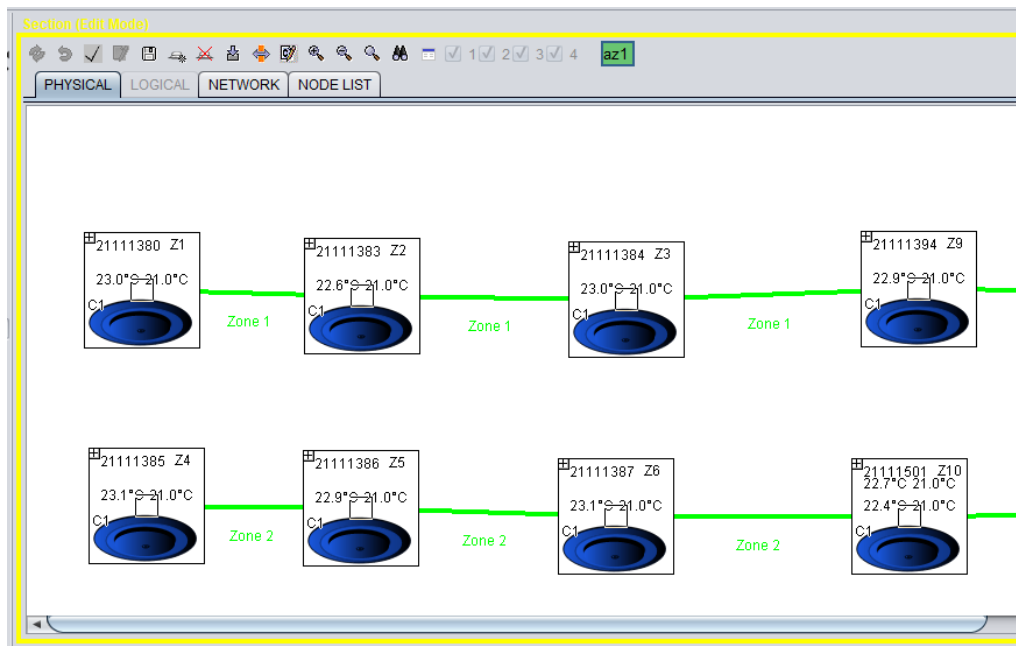




Step 2 – Select the edit function. Press ‘ctrl A’ to select all and then press delete to zero all the zones.

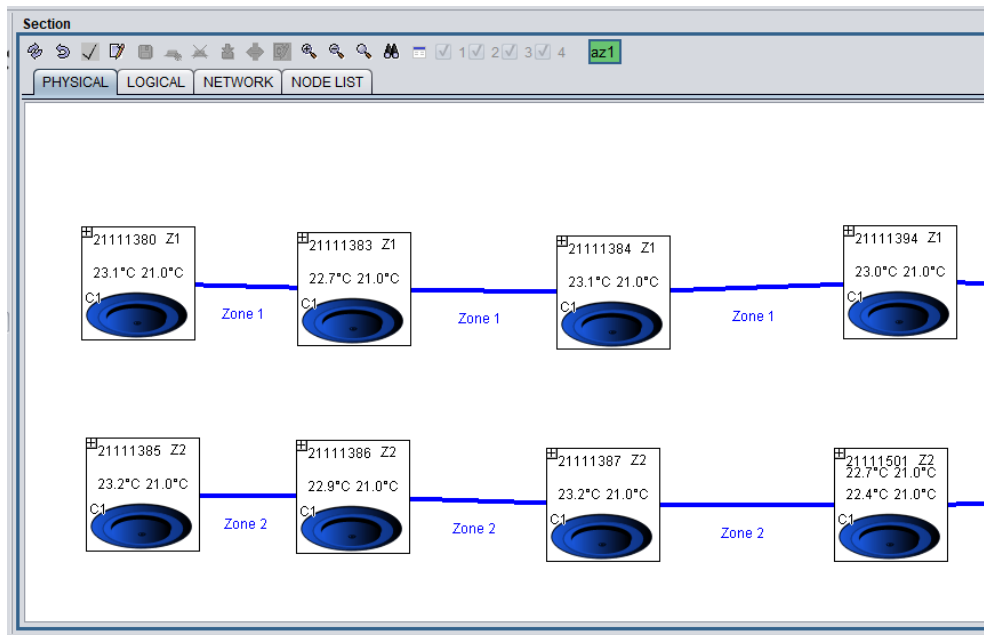


Step 3 – The diffusers can now be zoned as required by the BMS mapping. Note the auto-zone number will still be displayed on each diffuser. If the zoning needs to stay the same the user must now click on each diffuser icon and select that zone number from the dropdown list. Else the user can drag and link the diffusers for multiple diffuser zones as indicated.



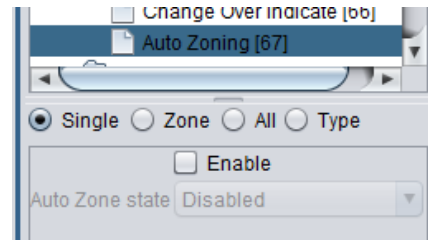


Step 4 – Press save. The new zoning is now in effect. Be sure to deactivate any master commands for diffusers changed to slave units.



Step 5 – As a final check, click on a diffuser icon and in the node panel select the Auto Zoning tab. Verify the Enable box as ticked and the state shown as ‘Enabled’. Press the read button and verify the Enable tick box cleared and the state changed to ‘Disabled’.

Only one diffuser need to be checked to confirm the successful conversion of the whole section.



A short summary of the manual procedures then as follows:

Manual setup of auto-zoning:

1. Connect diffuser network to mIm Tool.
2. Check OBMs for correct settings.
3. In Node List set all diffusers to Loop 0.
4. In Node List Enable Auto-zoning on all diffusers.
5. Disconnect, install on site and check operation.

Manual removal of auto zoning:

1. Connect mIm Tool and select Physical Tab
2. Go to Edit menu and Ctrl A/Delete to remove zones
3. Zone diffusers to BMS mapping and save.
4. Verify the slave diffuser master commands are switched off.
5. Verify Auto-zone Enable is switched off.