

1. Virtual Zones

Introduction

Virtual Zones are a new feature in SPC panel firmware 3.11. It is another tool available to installers in the context of Cause and Effect, greatly increasing its power.

A virtual zone is not associated with hardware, be it a wired sensor or switch, or a wireless sensor. Instead each virtual zone is associated with a mapping gate, which in turn can have a number of triggers, each of which can be set off in multiple ways, inclusive due to events caused by other hardware or virtual zones.

Configuration – General considerations

A virtual zone does nothing if it has no mapping gate assigned to it. This is how virtual zones configuration works:

- Virtual zones can be configured only via the panel web server (not the keypad). The exception to this rule is what can be configured for all zones via the keypad can also be configured for virtual zones: description, zone type, area and attributes (if the zone is not unused).
- It is possible to add a virtual zone only if at least one mapping gate is configured, otherwise there is an error message.
- When a virtual zone is created, the default mapping gate is always the first one available, the default zone is always the first available and the default area is always the first available. The default name in English is “Virtual Zone nn”. These defaults can then be modified as desired.
- If one deletes a mapping gate all the virtual zones assigned to that mapping gate will be deleted.
- A virtual zone is a floating zone, just like wireless zones and zones belonging to door controllers. This means that if X-BUS configuration is changed, for example by adding another I/O expander or changing the rotary switch address of an existing I/O expander, this will cause all floating zones in the range used by the expander to be moved up, including virtual zones.
- The maximum number of virtual zones is as follows:
 - SPC 4xxx: 4
 - SPC 5xxx: 20
 - SPC 4xxx: 100
- An info message will be shown (“Database Full”) if an attempt is made to add a virtual zone that would exceed the limits above.
- Virtual zones have by default the same attributes as hardware zones of the same type. Attributes for virtual zones can be configured in the Inputs page or with the keypad, just like for hardware zones.

Configuration web server pages

Virtual Zones list

There are two configuration pages. The first one is the page below that lists all the virtual zones. There are buttons to edit or delete an already configured virtual zones or add a new zone.

Advanced

Cause & Effect Verification License

Cause & Effect Configuration Triggers Mapping Gates **Virtual Zones** Cause & Effect List

Virtual Zones List

ID	Zone	Description	Type	Area	Mapping gate	Timer	Edit	Delete
1	17	Virtual Zone 1	Exit Term	1: Lobby	1:	100 * 100ms		
2	18	Virtual Zone 2	Unused	1: Lobby	2: Temp threshold	0 * 100ms		
3	19	Virtual Zone 3	Alarm	2: Office 1	3:	50 * 100ms		
4	20	Virtual Zone 4	Tech	1: Lobby	4:	0 * 100ms		

Add

The meaning of the items in the table above is described in the table below.

Item	Meaning
ID	The ID is just for reference. It can be useful for example to identify virtual zones if the zone number changes.
Zone	The zone number associated with the virtual zone. This is the what gets reported in event strings sent to ARCs.
Description	The name of the virtual zone.
Type	The type of the virtual zone (alarm, tech, unused, etc).
Area	The area to which the virtual zone is assigned.
Mapping gate	The mapping gate assigned to the virtual zone was. If this mapping gate is deleted the virtual zone is automatically deleted.
Timer	Value of the timer of the virtual zone. The operation of the timer is described in the section on operation of virtual zones.

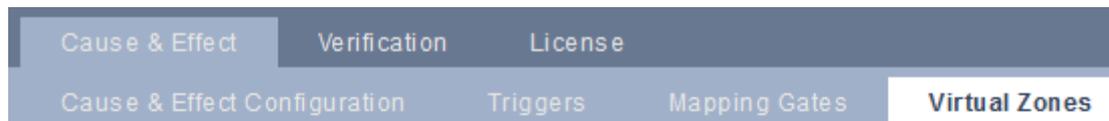
Virtual Zones editing

Below is the virtual zones configuration editing page. Every time the Edit button is clicked, or a new virtual zone is added, the user is shown this page where he can make the appropriate changes to the default settings for the zone. The drop-down lists show the available zones, types, areas and gates.

Note that the description, type and area can also be changed in the Inputs page or with the keypad, whereas the zone and gate assignments and timer value can be changed only in this page.

There are two buttons in this page:

- Clicking the Save button saves the information entered and returns the user to the virtual zones list.
- Clicking the Add button also saves the information entered but in addition it creates a new virtual zone with default values ready to be edited.



Virtual Zone 2

Zone	<input type="text" value="18"/>
Description	<input type="text" value="Virtual Zone 2"/>
Type	<input type="text" value="Tech"/>
Area	<input type="text" value="1: Lobby"/>
Mapping gate	<input type="text" value="2: Temp threshold"/>
Timer	<input type="text" value="0"/> * 100ms

Virtual Zones information messages

Information messages (one or two lines) can be displayed at the top of both configuration pages to provide feedback about the user action. For example, the screenshot below shows what happened in a panel after clicking the Add button after altering the information for zone #2. It shows that configuration of zone #2 was changed and zone #4 was created and is ready for editing.

The screenshot shows a configuration interface with a top navigation bar containing 'Cause & Effect', 'Verification', and 'License'. Below this is a secondary navigation bar with 'Cause & Effect Configuration', 'Triggers', 'Mapping Gates', 'Virtual Zones', and 'Cause & Effect List'. The 'Virtual Zones' tab is active. Two green success messages are displayed: 'Virtual Zone 2: Configuration saved OK' and 'Virtual Zone 4: Added'. Below these messages is a form titled 'Virtual Zone 4' with the following fields:

Zone	<input type="text" value="20"/>
Description	<input type="text" value="Virtual Zone 4"/>
Type	<input type="text" value="Unused"/>
Area	<input type="text" value="1: Lobby"/>
Mapping gate	<input type="text" value="1:"/>
Timer	<input type="text" value="0"/> * 100ms

At the bottom of the form are two buttons: 'Save' and 'Add'.

Virtual zones operation

A Virtual Zone is conceptually simple but it can be used in complex and powerful ways. A virtual zone is tied to a mapping gate: if the gate is on the zone is open, and vice-versa. The effect of the zone opening or closing depends on the zone type and, in more complex scenarios, if the zone is used in triggers.

Virtual zones are reported to ARCs like hardware zones of the same type if so configured and can be isolated or inhibited like hardware zones.

Virtual zones have associated timers. By default, the timer configuration value is zero, which means that the zone timer is inactive and the virtual zone being open or closed follows the mapping gate being switched ON or OFF. If, however the timer configuration has a value greater than zero, a timer is started when the virtual zone opens and the virtual zone auto-closes after the time expires even if the associated mapping gate is still in the ON state. In this case the virtual zone can open again only if the associated gate first closes and then opens.

Mapping gates can also have timers. Those timers are independent of the virtual zone's timers. It is perfectly fine in some scenarios to define a timer for both a mapping gate and a virtual zone associated with it.