Virtual Outputs & Linking

Overview
Linking is a flexible and powerful feature of WinDSX.

Inputs
Linking controls their armed state.
Inputs can link to Inputs, Outputs and Time Zones

Outputs
Linking controls their On/Off state.
Outputs can link to Outputs. Inputs and Time Zones

Time Zones
Linking to Time Zones overrides their schedule to either On or Off.

Virtual Outputs
Virtual Outputs are Outputs that do not physically exist but can be used in linking schemes. Outputs that do not physically exist are not supervised but the system manipulates them as if they were there. Their status is displayed in Workstation, and they can be used in conjunction with Time Zones and Linking.

Configuration
To Add a Virtual Output first identify a 1042 or 1022 controller in the system and note the device number. In the DataBase program select Outputs and click on the Add button. Give it a suitable name and select the device number that you have chosen of a 1042 or 1022 controller. For the Output Number enter a number in the range between 3 - 8. Outputs 1 and 2 reside physically on the controller you have chosen. Outputs 3-8 are logically in that panel but not physically. The Device chosen must actually exist for you to assign a virtual output to it. If you are going to program an advanced application involving Device 2 and you need a virtual output, create virtual output 2:3.

 A Virtual Output can be used to initiate a link when it goes open or secure by Time Zone or as a result of another link or manual operator command. Virtual Outputs have tremendous potential when used for clean-up timers, countdown timers, process control and many other possibilities. All this potential and power, and it's part of the base system at no additional cost.

Examples
For example, a **Bell Schedule** that rings bells in an educational facility typically require an Output to activate for just a few seconds multiple times a day. In this application, the relay output that is electrically controlling the bell circuit would be given no Time Zone and set to Link Secure. Virtual Outputs would be used to link to the relay output and each virtual output can be assigned up to 4 time zones. 4 Virtual Outputs could activate the relay output 16 times in a single day and you could have as many virtual outputs as you want.

Each Virtual Output can be assigned up to 4 Time Zones and each Time Zone has a start time of when the bell should ring with a duration of 1 minute (minimum Time Zone increment). When the Virtual Output goes secure by one of its 4 time zones it links to the Relay Output causing it to pulse for just a few seconds. Every additional Virtual Output used provides 4 more ring schedules. The linking group that contains the relay output has a response type of Pulse and is set for the number of seconds the bell should ring.

Another example would be using a Virtual Output as a **Clean-Up Timer** to make sure all doors are locked and all Inputs are armed according to their time zone or schedule. Anything in the system that might be manually overridden can be set back to its time zone schedule at a predetermined time each night. Create a Linking Group that includes the Inputs, Outputs, and Time Zones to be set back to their schedule and give them a response of "Time Zone". Assign that Linking Group to the Virtual Clean-Up Output and set the "Activates Linking Group" to Secure. Create a Time Zone that becomes active (start) when the Clean-Up Should occur and set the Stop to one minute later. Assign this Time Zone to the Virtual Clean-Up Output. Up to 4 Time Zones can be assigned to the Virtual Clean-Up Output to make sure critical components are doing what they are scheduled to do.

Door Unlock based on Bell Schedule

Put each of the doors that we want to follow the bell schedule on a 24 hour time zone and set the "State When Linked To" as Open. Put all of these Outputs in a Linking Group and set them to Pulse for X minutes (the unlock period) with an 8-5 time zone as the conditional time zone on each output in the group. This 8-5 time period of the conditional time zone is flexible but the point is to allow the bell schedule virtual outputs to only unlock the doors during the normal school day.

If there is to be different unlock times there would be different Linking Groups each one with the pulse time of how long the doors are to be unlocked. So there could be a 5 minute linking group, a 10 minute linking group, and a 30 minute linking group, if those are the different amounts of time the doors should unlock for. It would be beneficial to name these Linking Groups the amount of time they are to unlock the door. For example, the linking groups would be named 5 minute Unlock, 10 minute Unlock, and 30 minute Unlock.

Next, create at least one virtual output for every linking group. If you need to unlock the doors for 5 minutes 3 times a day that is 1 virtual output with 3 time zones. If you need to unlock the doors for 10 minutes 4 times a day that is one virtual output with 4 time zones. If you need to unlock the doors for 30 minutes 1 time a day that is 1 virtual output with 1 time zone. It would be beneficial to name these Virtual Outputs the amount of time the door is to be unlocked. For example, the Virtual Outputs would be named 5 minute Unlock, 10 minute Unlock, and 30 minute Unlock.

Next, create the time zones that are to unlock the doors. Each time the doors should unlock would be the start time of the time zone and the stop time would be 1 minute later. Assign these Time Zones to the appropriate Virtual Outputs. Once this is programmed it is just a matter of changing these time zones if the schedule changes. Do not use these time zones for any other purpose.

Time Zone	Outputs	Linking Group
7:55 Start 7:56 Stop	5 Minute Unlock	5 Minute Unlock
8:55 Start 8:56 Stop	5 Minute Unlock	5 Minute Unlock
9:55 Start 9:56 Stop	5 Minute Unlock	5 Minute Unlock
10:55 Start 10:56 Stop	30 Minute Unlock	30 Minute Unlock
13:05 Start 13:06 Stop	10 Minute Unlock	10 Minute Unlock
14:05 Start 14:06 Stop	10 Minute Unlock	10 Minute Unlock
15:05 Start 15:06 Stop	10 Minute Unlock	10 Minute Unlock
16:05 Start 16:06 Stop	10 Minute Unlock	10 Minute Unlock