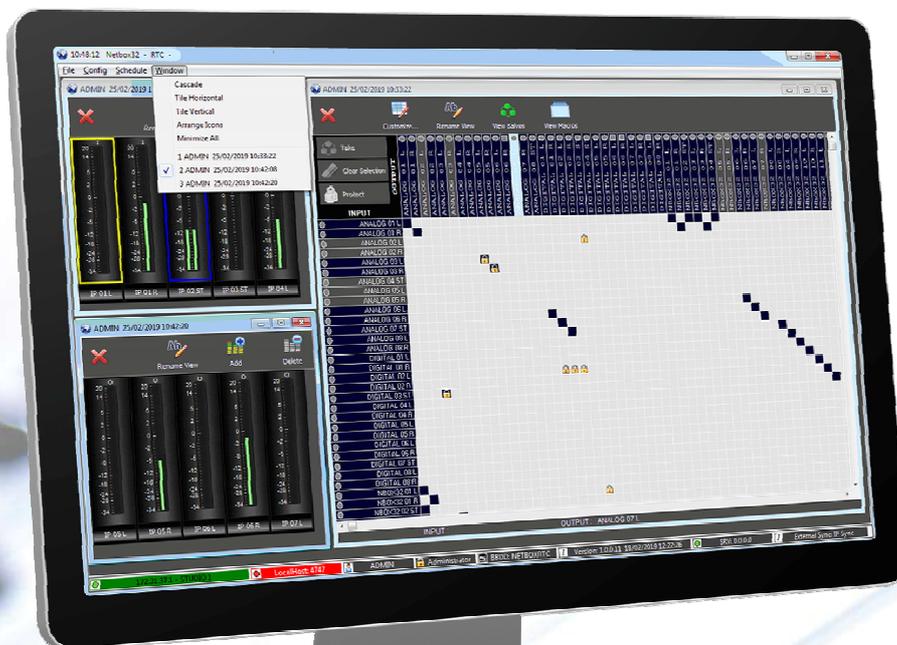


# AEQ NETBOX RTC

REAL-TIME CONTROL SOFTWARE FOR AEQ NETBOX AD/MX  
32/ 8 /DSP MATRIX

UPDATED DESCRIPTION

ED. 04/19



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## 1. INTRODUCTION.

Netbox RTC software was developed in 2018 in order to provide control of a Netbox 32 AD MX matrix. This device and the corresponding application were developed taking into consideration the experiences reported by our customers, who were missing the capabilities of AEQ TDM-based matrixes in AoIP systems using Dante Controller.

This document describes the functionality of Netbox RTC for Netbox 32 AD MX in detail, with a special focus placed on the new features presented in 2019, due to the software extension developed to support the new Netbox DSP device.

### NETBOX 32 AD MX. 64X64 ROUTER.

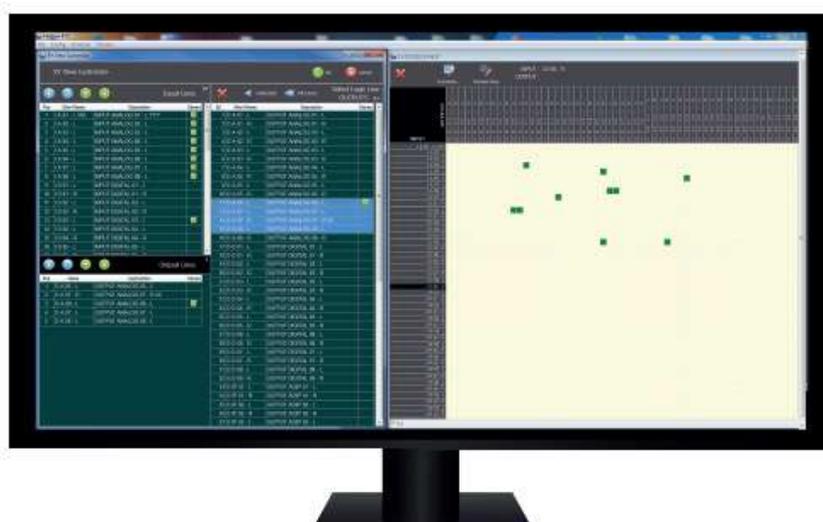
It performs as a mixing and distributing matrix, capable of mixing input signals (each one with independent relative level) to any of its 64 outputs (16 analogue, 16 digital and 32 IP Dante), as programmed using Netbox RTC application.



### NETBOX RTC APPLICATION.

Running on Windows operating systems, it performs the following features:

- Routing with audio mixing and distribution coming from mono or stereo analogue, digital and Dante inputs, delivering them to analogue, digital or Dante outputs.
- Configuration, management and scheduling of salvos.
- Multi-user and multi-device control. Different views and particular scenarios can be configured, and critical lines can be protected.
- Dante signals are routed within the IP network using “Dante Controller”.



"NetboxRTC" is a software application that converts a standard NETBOX 32/8 AD into a high-performance summing and distributing matrix for audio signal switching in Dante™/AES67 AoIP, digital and analogue formats. As any mission-critical component, this application has been designed to safeguard operation against user errors and equipment failures.

"NetboxRTC" application allows the user to setup, modify and control the resulting audio matrix in real time. Any event or action such as salvos, macros, Individual Cross-points, Physical and Virtual GPOs, can be triggered in any of the following ways:

- Manually.
- Programmed to be executed automatically according to a schedule.
- By manual execution of a scheduled event.
- By Physical GPIs.
- By Virtual GPIs.

### **CENTRALIZED AND DISTRIBUTED CONTROL OF THE MATRIXES.**

An important feature of Netbox RTC software is that it can control a set of Netbox 32 AD MX routers from a single work station. Conversely, a single matrix or router can also be controlled from several application instances running on different PCs. Additionally, views can be created, so each user can only see those input and output lines required to control the matrixes he/she is interested on. Besides, users can be created and organized in groups so, in a complex system, certain actions can be reserved to properly trained operators only.

This permits two very typical operation scenarios, among others:

- Control of the matrixes physically located in tens of associated stations from the radio broadcaster's main station.
- Control, from each studio, of its associated lines in the station's matrix, possibly in parallel with full matrix control from the central control room.

## 2. LOGIC LINES.

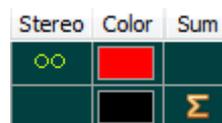
One of Netbox RTC software's main advantages over Dante Controller is the management of logic lines or groups of lines, and the possibility to perform audio mixings or line summations.

We can edit NETBOX physical or logical input and output lines in regards to their "Short Name" and "Description". Here you can also make or break "Stereo" pairs, choose which color we want the VUmeters frames to be displayed in (only for Dante lines) and define whether the output line will be summable or not.

INPUTS					OUTPUTS				
Short Name	Description	Stereo	Color		Short Name	Description	Stereo	Color	Sum
A 06 L	ANALOG 06 L				A 05 R	ANALOG 05 R			Σ
A 06 R	ANALOG 06 R				A 06 L	ANALOG 06 L			Σ
A 07 ST	ANALOG 07 ST	∞∞			A 06 R	ANALOG 06 R			
A 08 L	ANALOG 08 L				A 07 L	ANALOG 07 L			Σ
A 08 R	ANALOG 08 R				A 07 R	ANALOG 07 R			Σ
D 01 L	DIGITAL 01 L				A 08 ST	ANALOG 08 ST	∞∞		Σ
D 01 R	DIGITAL 01 R				D 01 L	DIGITAL 01 L			Σ
D 02 L	DIGITAL 02 L				D 01 R	DIGITAL 01 R			Σ
D 02 R	DIGITAL 02 R				D 02 L	DIGITAL 02 L			Σ
D 03 ST	DIGITAL 03 ST	∞∞			D 02 R	DIGITAL 02 R			
D 04 L	DIGITAL 04 L				D 03 ST	DIGITAL 03 ST	∞∞		Σ
D 04 R	DIGITAL 04 R				D 04 ST	DIGITAL 04 ST	∞∞		Σ
D 05 L	DIGITAL 05 L				D 05 L	DIGITAL 05 L			Σ
D 05 R	DIGITAL 05 R				D 05 R	DIGITAL 05 R			Σ
D 06 L	DIGITAL 06 L				D 06 L	DIGITAL 06 L			
D 06 R	DIGITAL 06 R				D 06 R	DIGITAL 06 R			
D 07 ST	DIGITAL 07 ST	∞∞			D 07 L	DIGITAL 07 L			Σ
D 08 L	DIGITAL 08 L				D 07 R	DIGITAL 07 R			Σ
D 08 R	DIGITAL 08 R				D 08 L	DIGITAL 08 L			Σ
IP 01 L	NBOX32 01 L		Yellow		D 08 R	DIGITAL 08 R			Σ
IP 01 R	NBOX32 01 R				IP 01 L	NBOX32 01 L			Σ
IP 02 ST	NBOX32 02 ST	∞∞	Blue		IP 01 R	NBOX32 01 R			Σ
IP 03 ST	NBOX32 03 ST	∞∞			IP 02 ST	NBOX32 02 ST	∞∞	Yellow	Σ
IP 04 L	NBOX32 04 L				IP 03 L	NBOX32 03 L			Σ
IP 04 R	NBOX32 04 R		Red		IP 03 R	NBOX32 03 R			Σ
IP 05 L	NBOX32 05 L				IP 04 L	NBOX32 04 L		Blue	Σ
IP 05 R	NBOX32 05 R				IP 04 R	NBOX32 04 R			Σ

The number of inputs and their generic names are imported by the application automatically when a connection to NETBOX is established.

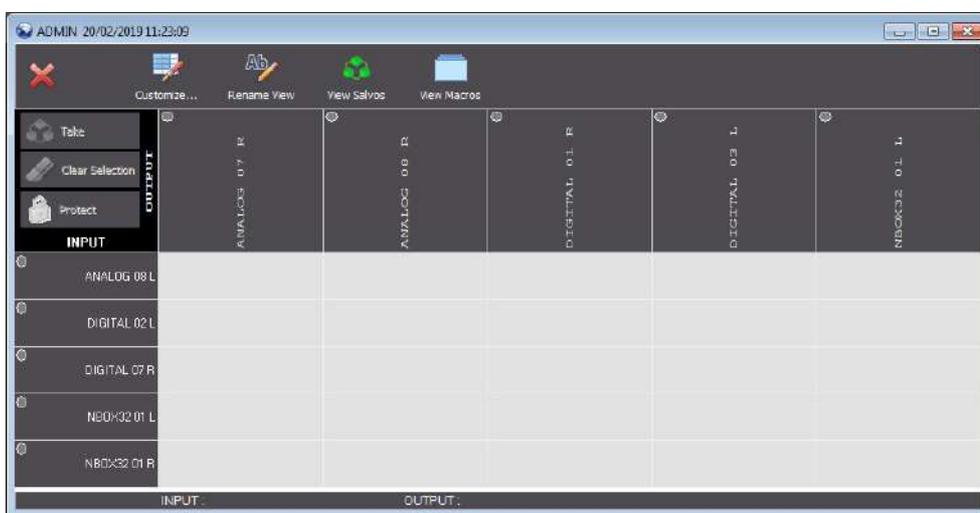
If we click on the edition button on either the input or the output side of the lines, an edition dialog box will open above the listed line, that allows us to change the "Short Name", "Description" and grouping and ungrouping the lines in Stereo pairs ("Mono" or "Stereo"). For Dante lines, you can also choose the color of the vumeter frames and, in the case of output lines, whether the line will be summable or not.



### 3. WORKSPACES OR VIEWS.

Real-time views can be configured according to the user's needs, determining which lines are accessible and the space they take in the screen. Starting with the minimum possible size for each logical line, the space occupied by each line is readjusted to fit the size of the window, thus displaying all of the lines selected in that view. If there are more lines than can be shown in one window, scroll bars will be displayed. A customized name can be assigned to each view so it can be selected among the existing ones later on.

For temporary assignments, such as external, changing lines, the labels for each line can also be edited in real time. However, when the session is closed, these changes will be lost, as they are momentary and depend on the use of the line at that particular moment.



The label of each input and output lines that form the XY view shows an audio level indicator besides it. In the case of the output lines, the indicator will be square when the line is non summable. The levels and associated colors are:

INPUT	
	ANALOG 01 L
	ANALOG 01 R
	ANALOG 02 L
	ANALOG 02 R

- Grey: less than -60dBFS
- Green: between -60 and -20dBFS
- Yellow: between -20 and -6dBFS
- Red: more than -6dBFS

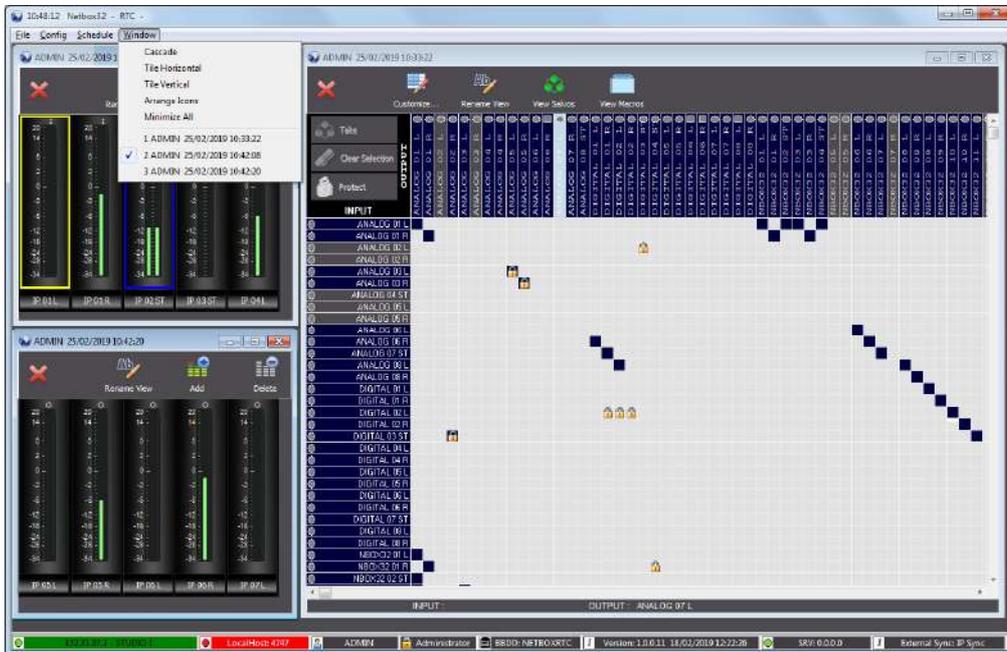
NOTE: 0dBFS = +24dBu

	DIGITAL 07 R
	DIGITAL 08 L
	DIGITAL 08 R

Besides renaming them, workspaces can be configured as default so, when the application is open, they are automatically loaded. Also, it can be defined which users have access to each particular workspace.

## MULTIPLE VIEWS.

You can organize the resulting workspace, including its XY and VU meters, views by re-sizing and placing these as per user's requirements.



The available options are:

- **"Cascade"**: this option will cascade all the views on the monitor.
- **"Tile Horizontal"**: this option will tile all the views horizontally on the monitor.
- **"Tile Vertical"**: this option will tile all the views vertically on the monitor.
- **"Arrange Icons"**: if we have a large number of minimized views on our workspace and in different locations, this option will arrange all these icons. The icons representing the minimized views will be organized at the bottom of the main Window of the workspace.
- **"Minimize All"**: this option will minimize all the open views and arrange them as icons at the bottom of the main Window of the workspace.

In the lower part of this menu, the workspace's open views are shown in order to provide a quick access to any of them.

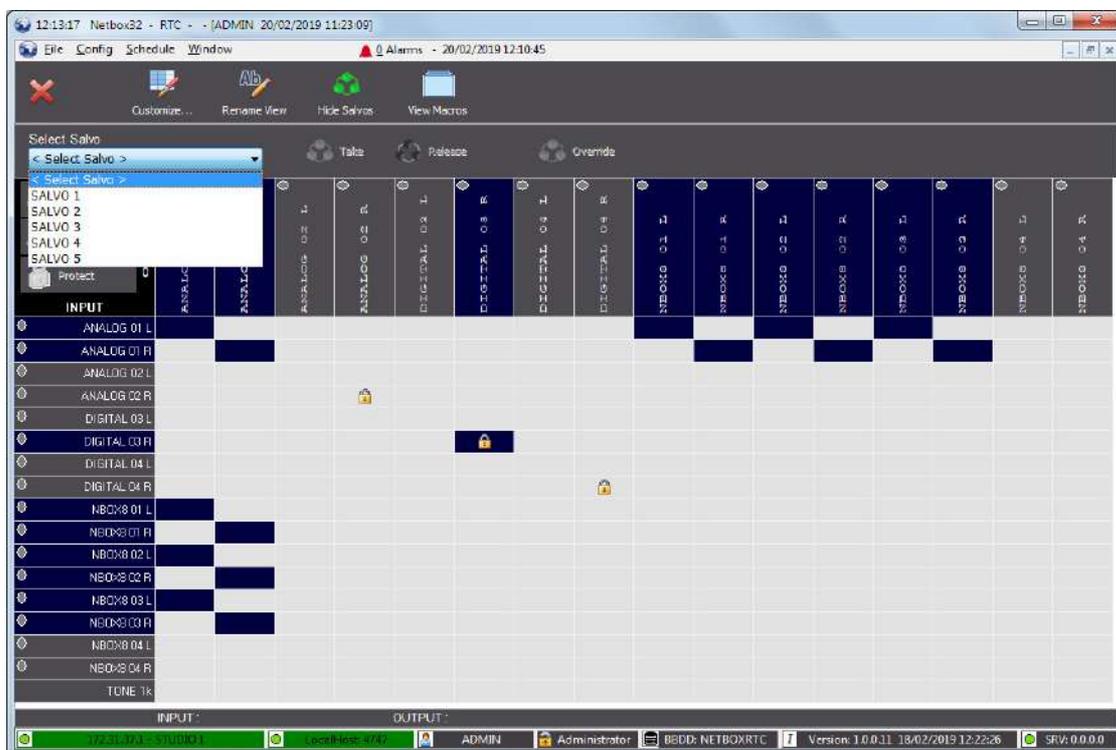
## 4. SALVOS AND MACROS.

The system allows for the definition of Salvos and Macros.

These are fundamental functions in audio matrixes and are not developed enough in Dante Controller, so the use of Netbox RTC on Netbox 32 AD MX is required in many applications.

### SALVOS.

A salvo is the definition of the connection of a set of lines, that needs to be performed at a certain moment, either manually, or automatically, triggered by a local or remote GPI. It includes a set of cross points to be created between inputs and outputs, crosspoints to be eliminated, as well as the application or release of protections to output lines.



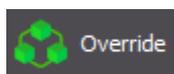
These are the available actions that can be performed on Salvos:



The **"Take"** button will activate the salvo and execute the defined actions: connect/disconnect and/or protect/unprotect cross-points.



Clicking on the **"Release"** button will deactivate the salvo and execute the opposite actions on cross-points.



If a salvo involves any protected cross-points, it's possible to execute the salvo completely, breaking those protections, by clicking on the **"Override"** button.

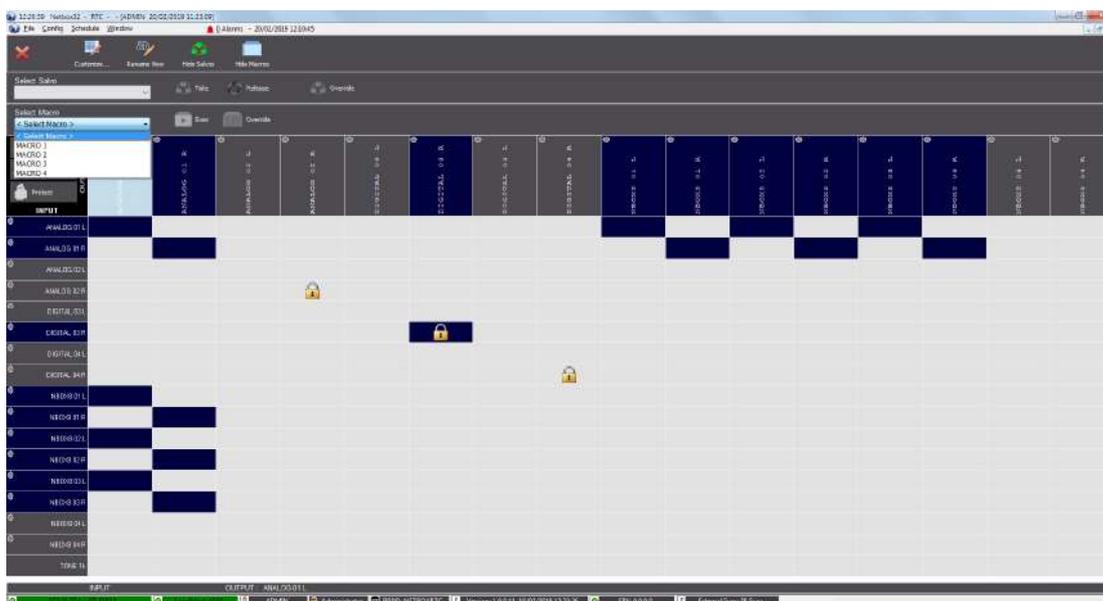
## CRITICAL SALVOS.

Sometimes it is required to present certain actions from causing errors that could affect ON AIR transmissions. If a salvo is marked as **critical** the user will be prompted to confirm the action by means of a warning message.

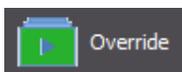


## MACROS.

Macros mean a higher level of activation of actions than Salvos. A macro is, indeed, a set of salvos, crosspoint activations, and local or remote GPO state changes, that are executed simultaneously at a given moment.



The "**Exec**" button will run all the actions that have been defined in the macro, including connection/disconnection, and/or protection/unprotection of cross-points, and activation/deactivation of salvos or GPOs. In case that any of the those cross-points is protected yet, no action will be executed on it when activating the macro.



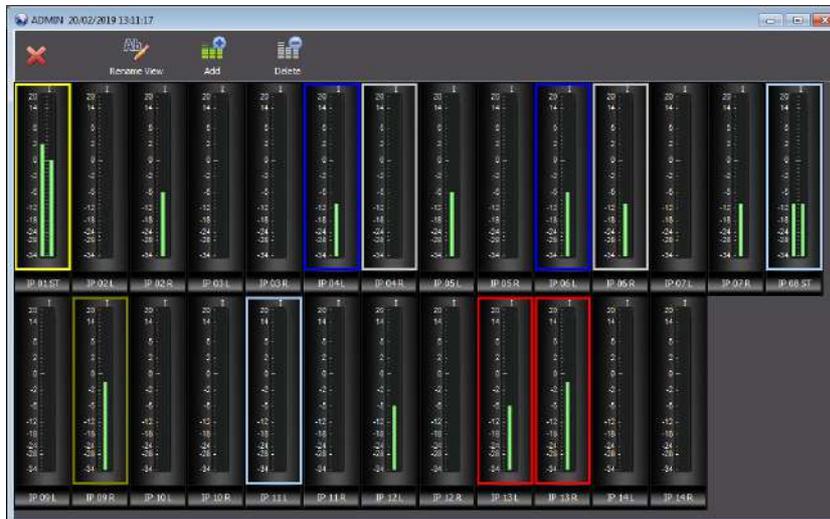
If a macro involves any protected cross-points, it's possible to execute the macro completely, breaking those protections, by clicking on the "**Override**" button.

If a macro is marked as **critical**, the user will be prompted to confirm the action by means of a warning message.



## 5. VUMETERS.

This is one of the new application's features developed for 2019.



Views can be defined including all the input and output vumeters in the matrix using AoIP Dante channels. Each view has an assigned name, so it can be selected as required. This way, input and output line levels can be displayed to have control over them.

The color of each of the frames surrounding the line vumeters can be chosen, allowing for better control of those lines that are critical or special.

These vumeter views can be added to the crosspoint views and workspaces, so we have not only each input and output presence indicators readily available, but also the vumeters of those lines which control is especially relevant.

## 6. MACROS AND SALVOS LOGGING.

This is another new feature developed for the application in 2019.

The "**Log - Macro & Salvo**" option of the "File" menu allows you to have a log of the salvos and macros executed by means of alarms, schedule, GPIs and Virtual GPIs. Each action has a different color and associated application:

- **Server (automatic execution):**
  - Alarm (red).
  - Schedule (green).
  - GPI (olive).
  - Virtual GPI (blue).
- **RTC (execution by operator):**
  - Salvo (lime).
  - Macro (yellow).

Date Time	App	GPI	User	Scheduler	Alarm	Macro	Action	Salvo	Action
21/01/2019 10:52:46	Srv	GPI					3		RELEASE
21/01/2019 10:52:45	Srv	GPI					3		TAKE
21/01/2019 10:52:44	Srv	GPI					3		RELEASE
21/01/2019 10:52:30	Srv	GPI					2		RELEASE
21/01/2019 10:52:21	Srv	GPI		TAREA 1		NETBOX32	EXEC		
21/01/2019 10:52:19	Srv	GPI					NBOX32		RELEASE
21/01/2019 10:52:16	Srv	GPI					2		TAKE
21/01/2019 10:52:14	Srv	GPI					3		TAKE
21/01/2019 10:52:11	Srv	GPI					NBOX32		TAKE
21/01/2019 10:51:05	Srv				ALARMA 1	NBOX 32	EXEC		
21/01/2019 10:50:57	Srv				ALARMA 1	NETBOX32	EXEC		
21/01/2019 10:50:49	Srv				ALARMA 1	NETBOX32	EXEC		
21/01/2019 10:50:33	Srv				ALARMA 1	NBOX 32	EXEC		
21/01/2019 10:50:24	Srv				ALARMA 1	NETBOX32	EXEC		
21/01/2019 10:50:14	RTC		ADMINISTRATOR				3		RELEASE
21/01/2019 10:50:11	RTC		ADMINISTRATOR				1		RELEASE
21/01/2019 10:50:08	RTC		ADMINISTRATOR			NBOX 32	EXEC		
21/01/2019 10:50:04	RTC		ADMINISTRATOR				2		RELEASE
21/01/2019 10:49:56	RTC		ADMINISTRATOR				3		TAKE
21/01/2019 10:49:50	RTC		ADMINISTRATOR				2		TAKE
21/01/2019 10:49:41	RTC		ADMINISTRATOR			NETBOX32	EXEC		
21/01/2019 10:49:27	RTC		ADMINISTRATOR				1		TAKE

## 7. DATABASE BACKUP & RESTORE FUNCTIONS.

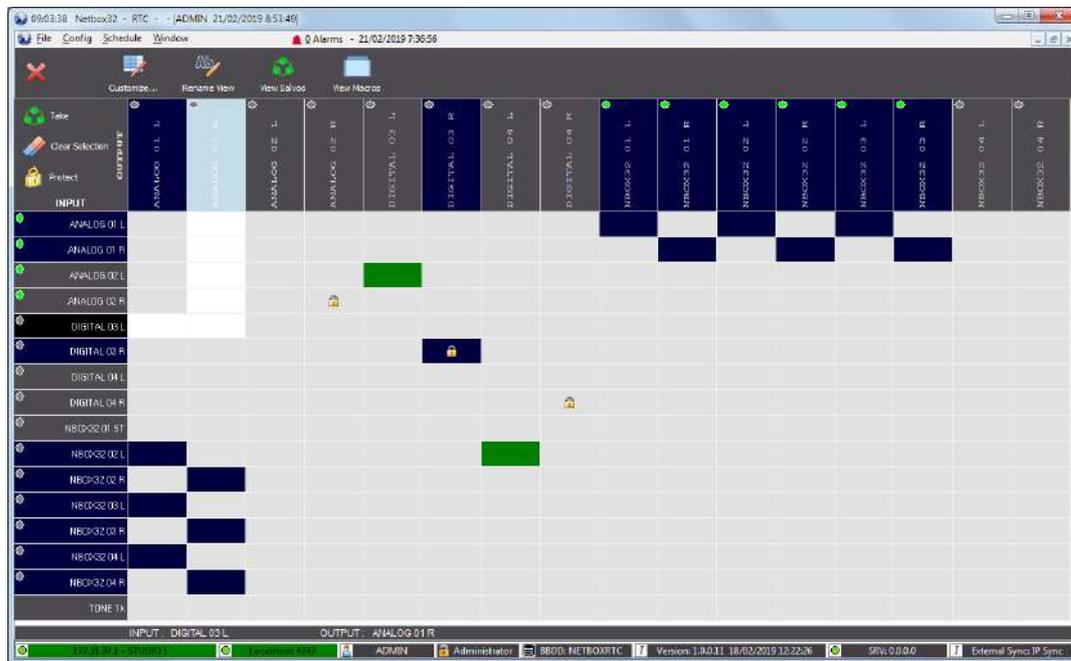
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In order to maintain the system's configuration and scheduled actions integrity, a new option has been added in 2019 allowing for the creation of database backups. The folder where each one is stored can be specified.

## 8. WORKING WITH CROSS POINTS.

It is interesting to check how Netbox RTC daily operation is like.

The operational window will have this appearance:

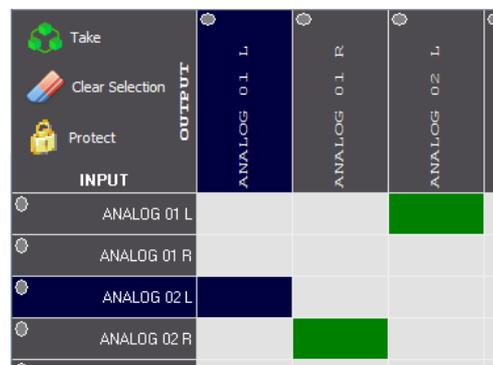


The actions to be carried out are:

- **Take:** Activates or deactivates the selected cross-points to connect (green cross-points) or disconnect (red cross-points) the respective logical lines.
- **Clear Selection:** Clears any selection of cross-points on the XY view.
- **Protect:** Sets the status of the cross-point as protected against incorrect actions: once activated, the cross-point will show a lock icon.



When you place the cursor over the cross-points you wish to establish and then select them, the cross-points will be marked **green**. When you press the "Take" button, the selected cross-points will be activated. An active cross-point is always indicated as **blue**.



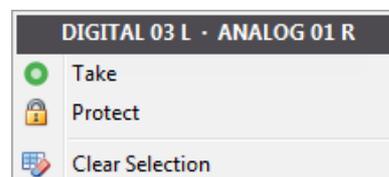
If you place the cursor over one or several active cross-points (marked in blue) and then select them, they will be marked in **red**. Pressing the "Take" button deactivates the selected cross-points, that will be cleared from any colour.



If a set of active and inactive cross-points are selected (they will be marked in red and green, respectively) and "Take" is executed, the "NetboxRTC" application will execute both the connections and disconnections, i.e. it is possible to both activate and deactivate multiple cross-points with the same "Take" action.

### CONTEXT MENUS.

In the XY view you can use the following context menu displayed by right-clicking the mouse over a **cross-point**:



For each cross-point you can "Take" (activate or deactivate) or "Protect" it and also see the physical connections (input connected to output). The "Clear Selection" option will clear any selection of cross-points on the XY view.

If you locate the mouse over the label of an **input** or **output line**, a right mouse click will open the following context menu:

As you can see the "Gain Control" option has been added to the menu and has also changed the information concerning the physical connection - only indicating the name of the input/output line. The remainder actions are intact i.e., you can still execute the "Take" action, "Protect" the selected cross-points or clear the selected cross-points.



## GAIN REGULATION.

The "**Gain Control**" option allows you to set the individual gain for each of the NETBOX inputs and outputs, thus effectively the gain for the cross-point. The adjustments is accomplished by selecting the "Gain Control" in the contextual menu and then acting on the gain with the Fader tool that will pop-up. Digital gain adjustment is from -infinite to +12dB. It is also possible to invert the **phase** of the signal if so required.

The gain of an input or output line can be adjusted even if these are not part of a cross-point.



## 9. ALARMS.

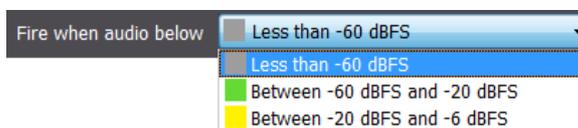
The 2019 version of the application allows for the configuration of system alarms when signal in a line disappears or is back, as well for the definition of alternatives to be executed meanwhile the signal has not returned.

These are some of the aspect that can be taken into account when configuring an alarm:

It is possible to choose what to do in case of conflict (when there are protected cross-points). You can select execution as "Normal" or "Overwrite" (make an execution despite the protection).

The selected audio level (in dBFS) at which the alarm will be fired can be selected. There are 3 options with 3 associated colors:

- Grey: less than -60dBFS.
- Green: between -60 and -20dBFS.
- Yellow: between -20 and -6dBFS.

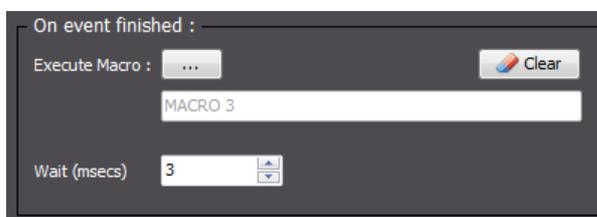


**"Line Alarm"**: The line the alarm is applied to. It can be an input or an output.



**"On event fired"**: Selection of the macro that will be executed on alarm fired and the wait time after the detection of the signal absence.

**"On event finished"**: Selection of the macro that will be executed when alarm finishes and the wait time after the detection of the signal return.



## 10. PHYSICAL AND VIRTUAL GPIs AND GPOs.

### VIRTUAL GPO.

NETBOX devices are capable of generating Virtual GPO commands that is sent over the audio and control network. This command can be interpreted by any AEQ standard AoIP piece of equipment and many third-party SW applications.

These GPO commands can be used, for example, to trigger macros and scheduled tasks when we need to command or automate the control of other equipment from the NetboxRTC.

In order to do this, we need to indicate the IP address that the GPO command is intended - addressed to, and the Id number of the GPO. We could generate up to 256 GPO commands.

### VIRTUAL GPI.

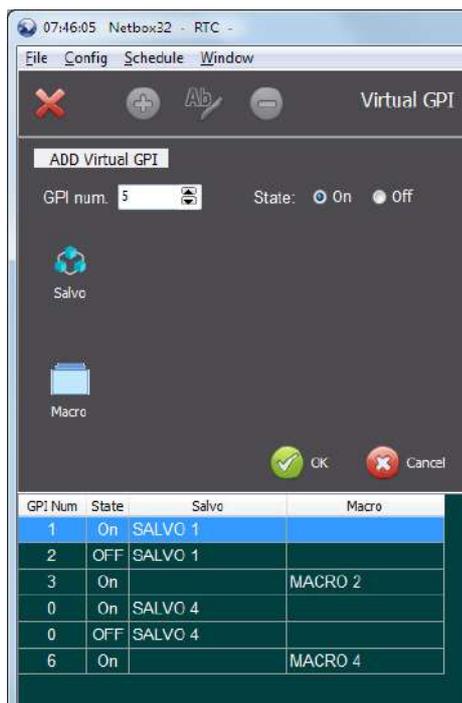
Likewise, NETBOX devices are capable of receiving a Virtual GPI command that is sent over the audio and control network. This command can be generated by any AEQ standard AoIP piece of equipment and many third-party SW applications. These GPI commands can be used to activate macros or salvos when NetboxRTC operation needs to be automated from an external device or software application, for example.

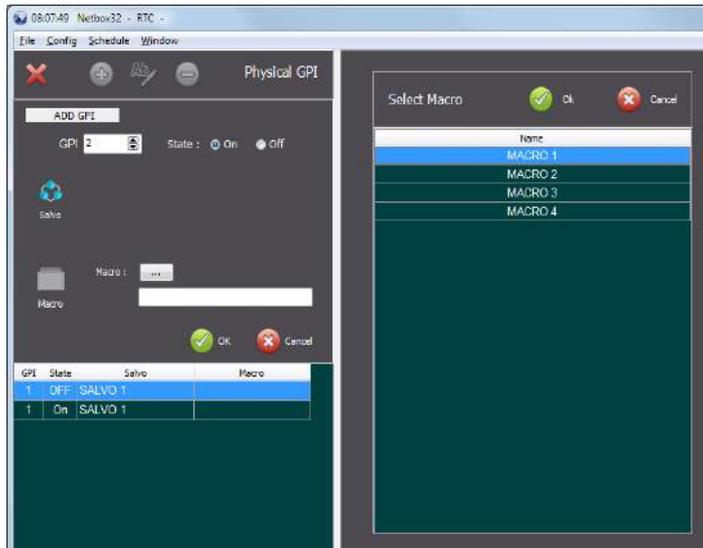
These commands, that are stored in NetboxRTC database, are configured. Which macros or salvos need to be executed when requested for is also defined.

In order to do this, we need to indicate the Id number of the GPI. We could receive up to 256 GPI commands or Id numbers from each and every IP address that are able to communicate with the NETBOX.

### PHYSICAL GPIs AND GPOs.

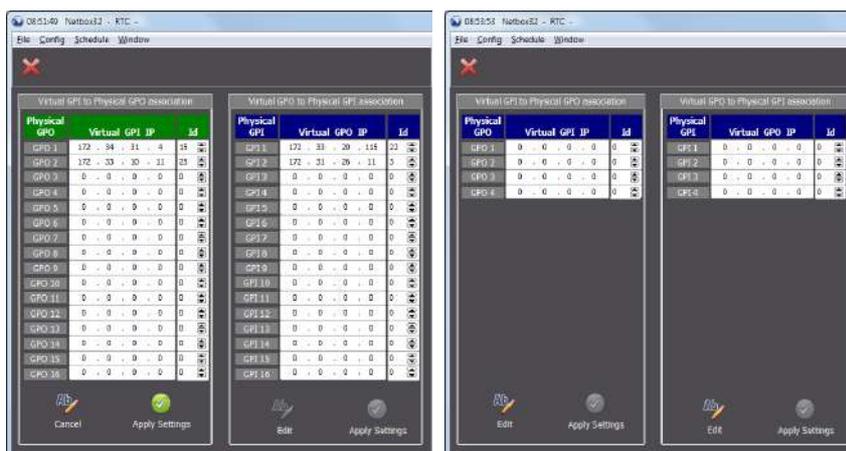
NETBOX 32 AD and NETBOX 8 AD have 16 and 4 physical opto-coupled GPI/O's respectively. This section allows the user of NetboxRTC to define what physical GPI corresponds to a specific salvo or macro, i.e. if an equipment or device is physically connected to the GPI's of the NETBOX 32/8 AD and this device sends a GPO signal with the Id of the GPI and "On" or "Off" status, NETBOX will be able to interpret this and signal to the NetboxRTC application what changes needs to be accomplished in the matrix.





### ASSOCIATION BETWEEN VIRTUAL AND PHYSICAL GPIs AND GPOs.

A translation table relating virtual and physical GPIOs can be defined.



The user can edit the IP address and ID number for the expected GPI corresponding to aGPO that is physically connected to the NETBOX unit. The process is the same as for the association of a virtual GPO to a physical GPI: a device that is connected to the NETBOX unit could send a command to GPI 1 that in this case translates to IP address 172.33.20.115 and ID number 22.

## 11. SCHEDULE.

A schedule is a way to automate the execution of salvos and macros. The system time must be correctly synchronized to a NTP server or the station's Masterclock, for example. When we open the "**Schedule**" option, the schedule menu and list will appear:

Active	Schedule	Id	Description	Salvo	Macro	Recurrence	Begin Date	End Date	Begin Time	Last Modified
<input checked="" type="checkbox"/>	ALWAYS	1	SCHEDULE 1	SALVO 1		111111	21/12/2018	01/01/3000	9:00:00	21/12/2018 8:40:06
<input checked="" type="checkbox"/>	WORK	2	WORK 1	SALVO 2		111111	21/12/2018	01/01/3000	11:15:00	21/12/2018 8:41:59
<input checked="" type="checkbox"/>	WORK	3	WORK 2	SALVO 3		111111	21/12/2018	01/01/3000	13:30:00	21/12/2018 8:43:19
<input checked="" type="checkbox"/>	HOLIDAY	4	HOLIDAYS 1		MACRO 1	111111	24/12/2018	24/12/2019	15:30:00	24/12/2018 8:44:22
<input checked="" type="checkbox"/>	HOLIDAY	5	HOLIDAYS 2		MACRO 3	111111	24/12/2018	24/12/2020	7:00:00	24/12/2018 8:55:24
<input checked="" type="checkbox"/>	ALWAYS	6	SCHEDULE 2	SALVO 4		111000	21/12/2018	01/01/3000	7:00:00	21/12/2018 8:58:55

From left to right, the first section is "**SHOT PROPERTIES**". This section defines all the basic properties in regards to time and dates of the scheduled task. Here we can activate the task or schedule by clicking or selecting the "Active task" tic box. When a task or schedule is active, this means that it will be executed as programmed. If not active, the task is programmed but will not be executed.

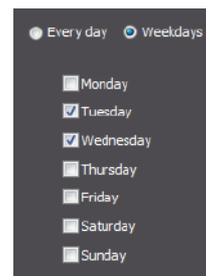
The "Task Description" field allows the user to edit a description for the scheduled task. Right beneath this field, you can define if the scheduled task should be executed always, only on holidays or only on working days, according to the calendar that we have defined in the "**Holiday Calendar**" option of the "Schedule" drop-down menu (more information can be found at the end of this section).

We can define a date to start the task and the exact time that we want the task to be executed at. We can also decide if this task should be executed indefinitely or with a specific end date. The "Task start" field is a date selection field and will return the computer date and calendar; here we can select the date that the scheduled task should start being executed from.

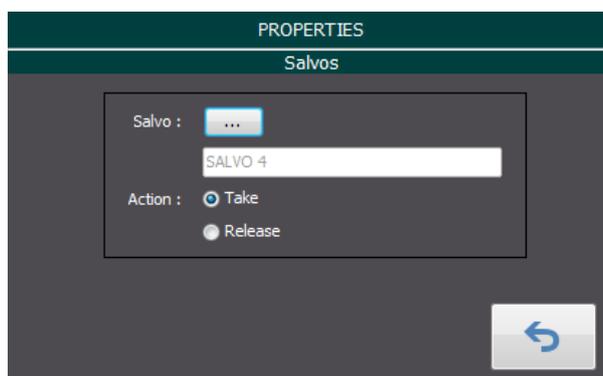
The "Execution Time" field defines the time when the scheduled task should be triggered or "shot".

"Completing the task" area has two options: "Indefinite" and "Until the" date. "Indefinite" option will begin executing the scheduled task until we either make it inactive or we delete the schedule. The "Until the" field will define a date limitation or time window, i.e. from the task start until the last date of execution of the scheduled task. Even if the schedule remains active after the last date of execution defined, the scheduled task will not be executed again after this date.

Immediately to the right and still in the section of "SHOT PROPERTIES" there are two options: "Every day" and "Weekdays". If we want to define specific weekdays for the scheduled task to be executed, we select the "Weekdays" option. This will provide access to the selection of the specific weekdays – Monday through Sunday. Simply select what weekdays the scheduled task should be executed on within the date and time limitations previously defined.



The next section to the Right is "**PROPERTIES**". It has two buttons available: "Salvo" and "Macro". The "Salvo" button will open a window where the  button will give access to a list of the existing salvos in order to choose one of them. Once the salvo has been selected, it will be shown in the field immediately below the button. Under this field there are two "Action" options that can be selected – "Take" or "Release", meaning that we either choose to "Take" the salvo or to "Release" it. The last button in the lower right corner will exit the "PROPERTIES" section to present the "Salvo" / "Macro" buttons without further changes made to the scheduled task.



The last section in the add and edit schedules window is the "**ADD**" section.

Immediately below the scheduled task sections there is a grey field holding the text "Drag a column header here to group by that column". This becomes very useful when we have a long list of scheduled tasks as it allows us to group them.

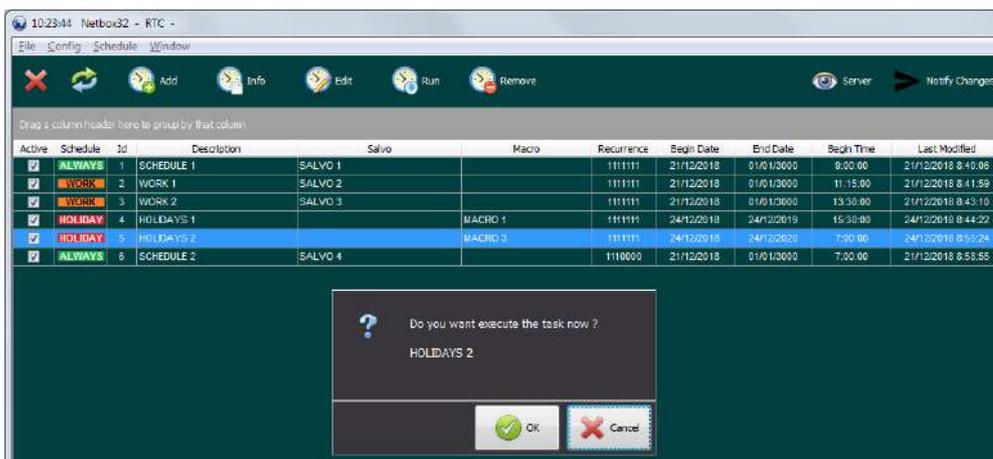


If we expand the view for each of the macros in this new list, we will be presented a list like this:

Macro									
Active	Schedule	Id	Description	Salvo	Recurrence	Begin Date	End Date	Begin Time	Last Modified
Macro :									
<input checked="" type="checkbox"/>	ALWAYS	1	SCHEDULE 1	SALVO 1	1111111	21/12/2018	01/01/3000	9:00:00	21/12/2018 8:40:06
<input checked="" type="checkbox"/>	WORK	2	WORK 1	SALVO 2	1111111	21/12/2018	01/01/3000	11:15:00	21/12/2018 8:41:59
<input checked="" type="checkbox"/>	WORK	3	WORK 2	SALVO 3	1111111	21/12/2018	01/01/3000	13:30:00	21/12/2018 8:43:10
<input checked="" type="checkbox"/>	ALWAYS	6	SCHEDULE 2	SALVO 4	1110000	21/12/2018	01/01/3000	7:00:00	21/12/2018 8:58:55
Macro : MACRO 1									
<input checked="" type="checkbox"/>	HOLIDAY	4	HOLIDAYS 1		1111111	24/12/2018	24/12/2019	15:30:00	24/12/2018 8:44:22
Macro : MACRO 3									
<input checked="" type="checkbox"/>	HOLIDAY	5	HOLIDAYS 2		1111111	24/12/2018	24/12/2020	7:00:00	24/12/2018 8:55:24

The column headers are the following:

- **"Active"**: if the tic box is marked or selected, this means that the schedule is active, i.e. has been set to active and will be executed when the moment programmed to trigger the task arrives.
- **"Schedule"**: indicates when the task will be executed according to calendar. You can choose to execute this on a working day ("WORK"), a holiday ("HOLIDAY") or any day of the week no matter if it's a working day or not ("ALWAYS").
- **"Id"**: this is an automatic counter.
- **"Description"**: allows the user to provide a brief description of the schedule.
- **"Salvo"**: indicates what salvo is used in the scheduled task. If this field is empty this means that no salvo has been defined to be part of the schedule.
- **"Macro"**: indicates what macro is used in the scheduled task.
- **"Recurrence"**: indicates, in binary, the recurrence in a representation of seven days, the first day being Monday.
- **"Begin Date"**: indicates the date from when the schedule will start to be executed.
- **"End Date"**: indicates the last date that the schedule will be executed.
- **"Begin Time"**: indicates the exact time when the schedule will be executed on the "Begin Date" and with the "Recurrence" that has been configured.
- **"Last Modified"**: shows the last date and time when the schedule was modified.



The "Edit" button will open the selected schedule and allow the user to modify the specifics of the scheduled task.



The "Run" button allows the user to run a schedule manually and at will, for example outside the established dates and time or during an inactive schedule.



The "Remove" button allows the user to remove or delete a schedule from the list of scheduled tasks.



The "Server" button allows the user to consult the scheduled tasks that are programmed to be executed by the "NetboxRTC" Server. When the user clicks on this button the following window will appear:



This window provides information concerning the scheduled tasks or jobs that are pending for the Server application.



The last button in the schedules section is "Notify Changes". When clicking on this button, the "NetboxRTC" application will request the "NetboxRTC" Server application to notify the Client application about any changes in the database and update the information concerning the scheduled tasks.

Finally, the "**Holiday Calendar**" option of the "Schedule" drop-down menu allows you to define a calendar of holidays and working days in order to use it to define when the different scheduled tasks should be executed. It's possible to configure different years.

In order to do that, simply click on the desired day and select on the drop-down menu that appears whether that day will be a holiday or a working day.

