trivum RTI driver documentation

RTI Integration

trivum technologies GmbH <info@trivum.com>

v1.0, 2024-12-13 :title-logo-image: image::../images/trivum-logo.svg[pdfwidth=150,align=right]

1. General

The company RTI specializes in device control and allows partners to develop drivers for their own products.

trivum Multiroom systems are ideally suited for use in RTI installations due to their flexibility and the integrated KNX support. The RTI remote controls, touchpanels and the RTI iOS app "RTiPanel" are again excellent for controlling our trivum systems.

With the newly developed trivum RTI driver we provide free of charge one of the best (multiroom) audio drivers for RTI.

The functionality can be tested by any RTI system integrator - without trivum hardware! To set up, please read chapter Parameters.

1.1. Versions

trivum has been supporting RTI since software V8. Currently the following drivers are available:

- Version V9.36 (21. Oct. 2024)

The problem has been fixed that if the system had no groups active, Grouping list boxes stayed empty after startup, allowing no grouping with RTI. Furthermore after grouping, then removing zones from the group, old entries were shown in the current group list.

- Version V9.33 (23. Mar. 2021)

The problem has been fixed that after a few days some commands were no longer processed by the RTI driver.

- Version V9.32 (30. Oct. 2020)

We removed the limit of 8 listening zones, because some customers wanted to have more. Please keep in mind, that each listening zone uses a separate TCP connection and uses additional memory. If you use many listening zones, then you might have to use a bigger RTI controller with more memory and a faster CPU. Please also refer to V9.30 changes.

- Version V9.31 (02. Oct. 2020)
  - Additional trace: It is now also possible to use the -what option of the trivum trace tool
  - Fixed a bug that occurred with mutually influencing requests. Occured especially in combination with a group stop situation. RTI controllers responded to this bug with freeze or slow performance. Besides to use the V9.31 driver, the MusicCenter software must also be updated to >= V9.61
  - Fixed a memory leak
- Version V9.30 (25. March 2020)
  General rework.
  - Fixed some minor bugs

    - It is now possible to configure up to 32 Zones.
    - Besides the "current zone" of a view/device, which provides many usable variables which can be used in the integration designer, up to 8 additional zones can be configured to listen for changes and provide their variables as well for buttons or text areas. ?This is especially interesting, if you want to show the status of multiple zones on one page.?Please be aware, that this needs some resources of your RTI controller. Not too much, but the driver establishes an additional communication connection between the driver and the trivum MusicCenter to enable these additional variables.
    - Fixed a problem which prevents the trivum trace tool to connect
    - Enhanced the trace capabilities, which are offered using the trivum trace tool. This command line tool is available from our service website. We added statistics information and performance measuring.
    - This version should be a faster because of some code optimizations.
    - The volume +/- handing should now be smoother. The new implementation reduces the network traffic during volume +/- repeats
    - The driver now saves information about up to 20 starts and shutdowns. The information can be listed (and reset) using the trivum trace tool.
- Version V9.29 (5. December 2019)
  Added function to set current zone by ID. Please use the ID which is given in the trivum MusicCenter Web Setup RTI section. Fixed a problem, that the zone information has been ignored in:
    - set absolute volume
    - set absolute room volume
    - sendEvent (invoke trivum action)
- Version 9.27 of October 2019
  Correct display of space and special characters in zone names and actions.
- Version 9.22 of September 22, 2017
  New Commands in Grouping:
    - Zone / Group can be extended by any zone
    - Any zone can be removed from a group. NOTE: The new commands use the trivum zone IDs directly. Please check the correct zone IDs from the RTI overview in the trivum WebConfig.
- Version 9.21
  Bugfixes in the project files
- Version 9.20 The new driver requiring V9 or higher software.

This is based on the functionality of the trivum TouchPads in music control. There are music menus, music search, zone selection and groupings.

Further information can be found in chapter Functions of the driver

- Driver version V9.0x for trivum MusicCenter V8.

Version V9.04 is no longer developed from September 2017 onwards.

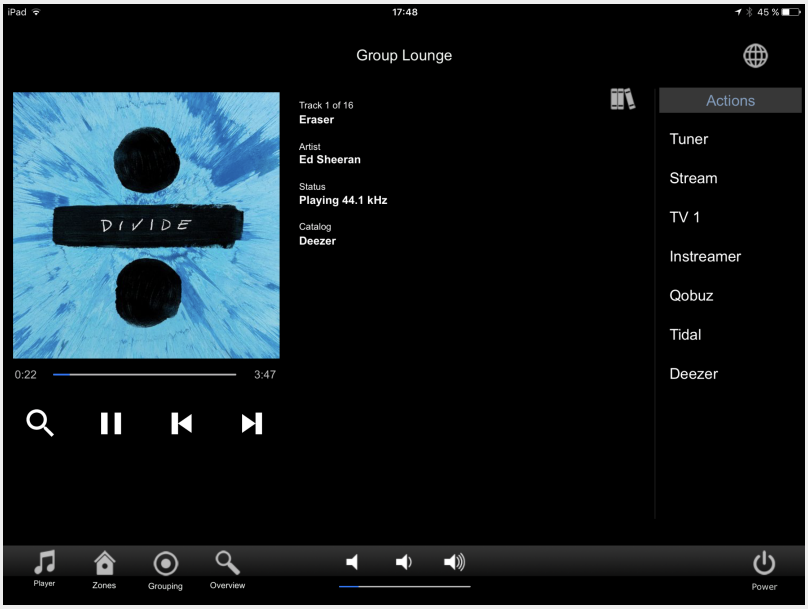
1.2. License and Support

trivum provides its RTI driver free of charge. Within the scope of our support, we try to eliminate possible errors promptly.

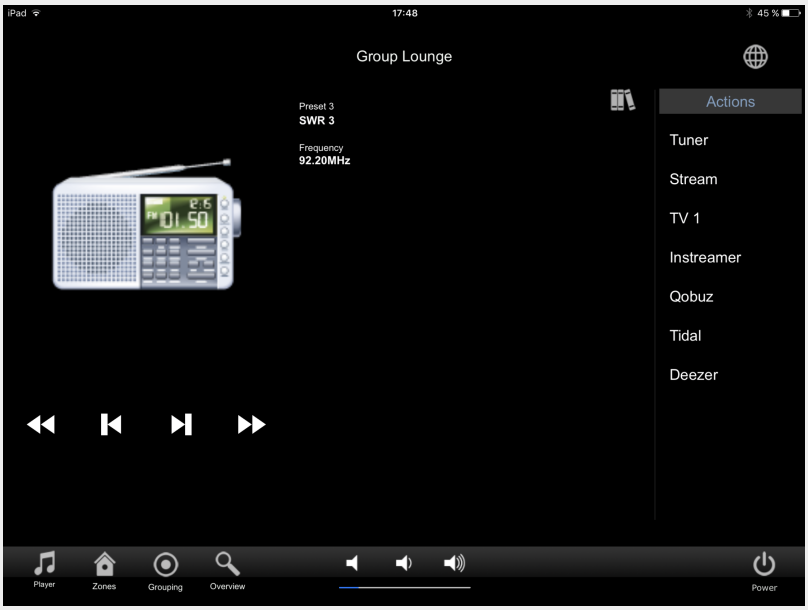
The user has no claim to the correct function or a certain range of functions. trivum reserves the right at all times to extend, modify or remove functions between the versions. As far as it is possible for us to keep the driver constant, develop it further and correct any errors. This is done without any obligation. If you use RTI drivers from trivum, you agree with this procedure.

1.3. Examples / Screenshots

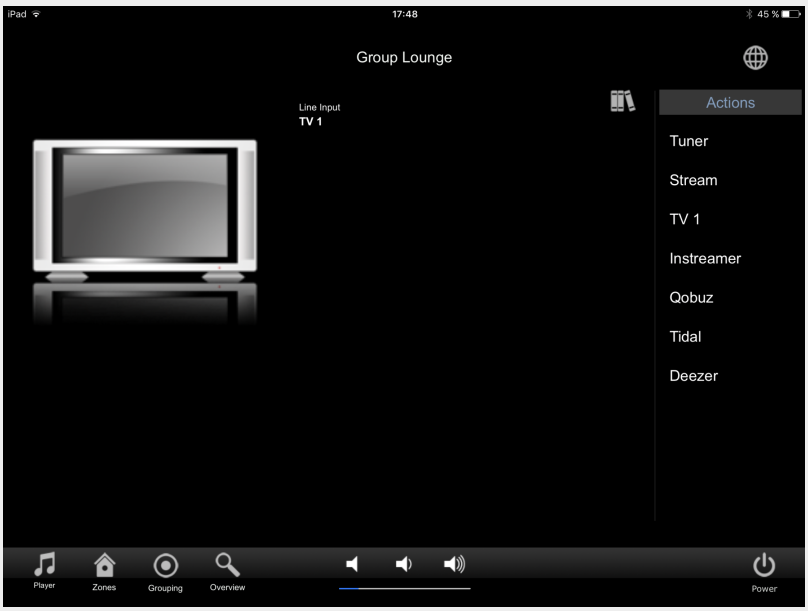
1.3.1. Page "Streaming"



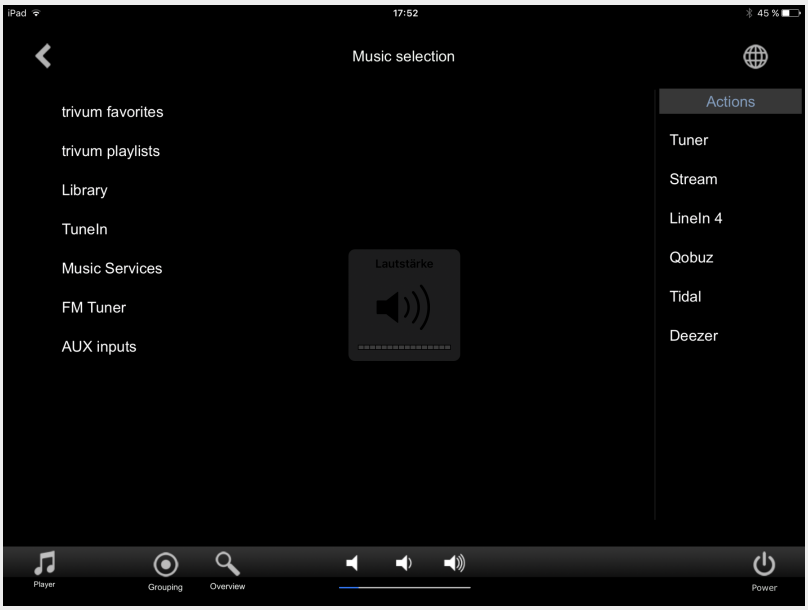
1.3.2. Page "Tuner"



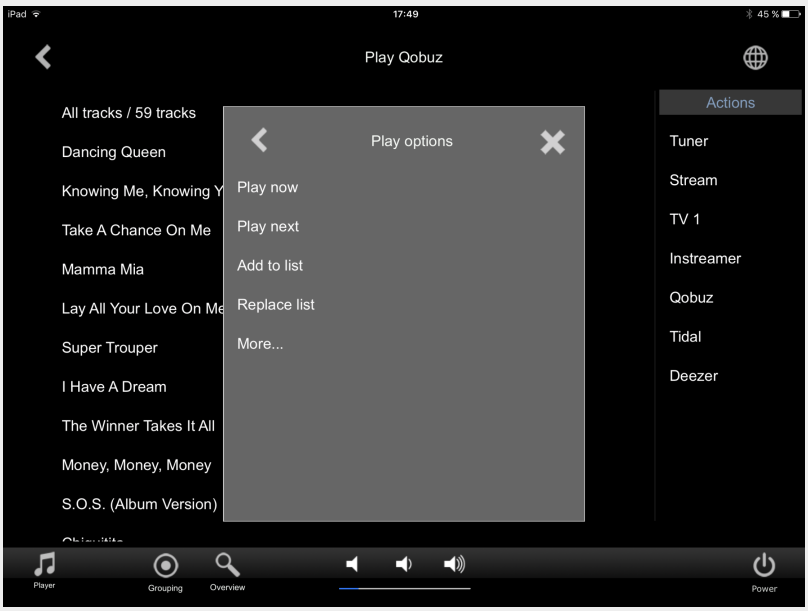
1.3.3. Page "Line Input"



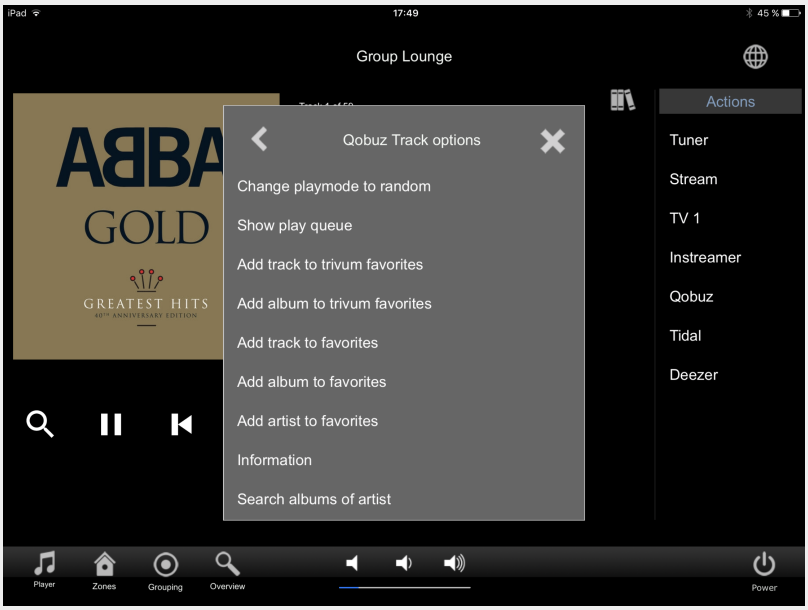
1.3.4. Page "Music Menu"



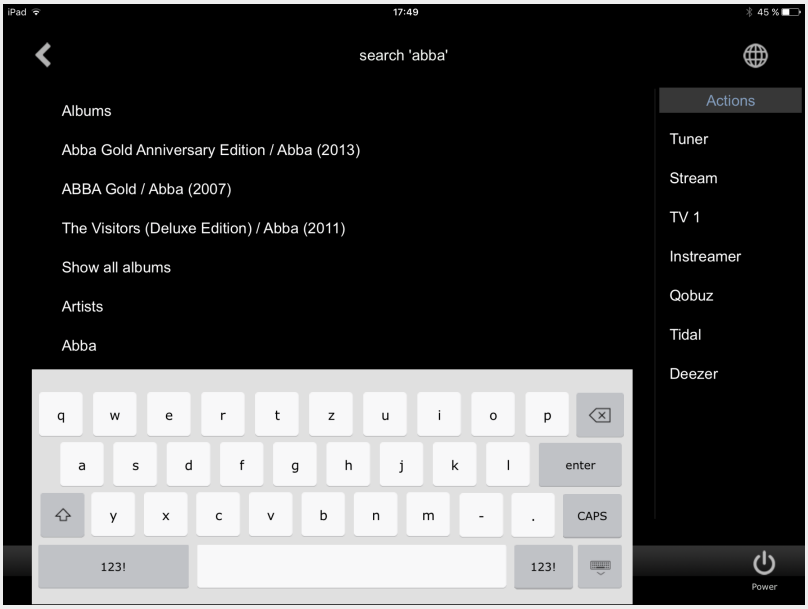
1.3.5. Page "Play Menu"



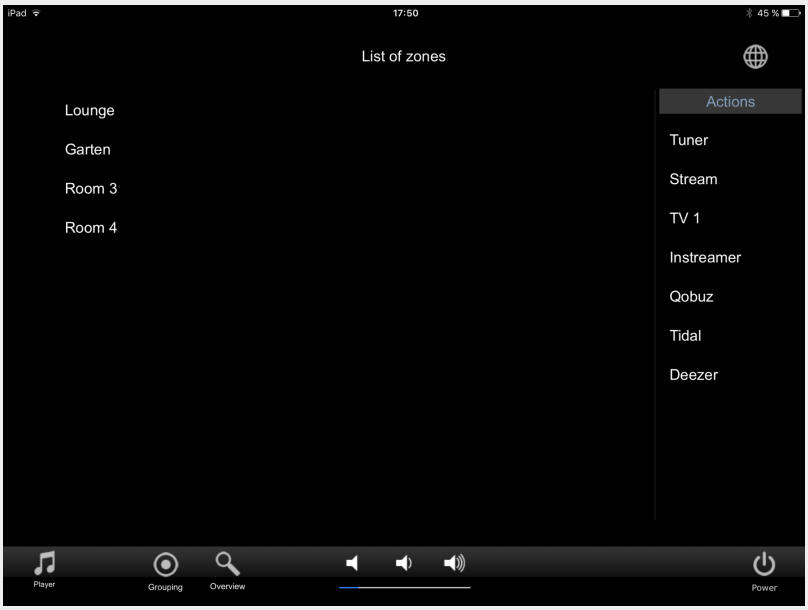
1.3.6. Page "Context Menu"



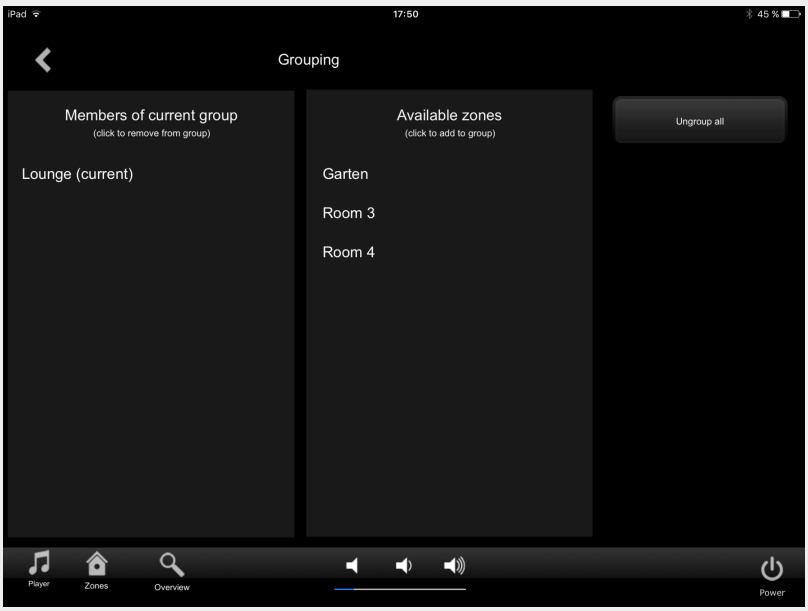
1.3.7. Page "Search"



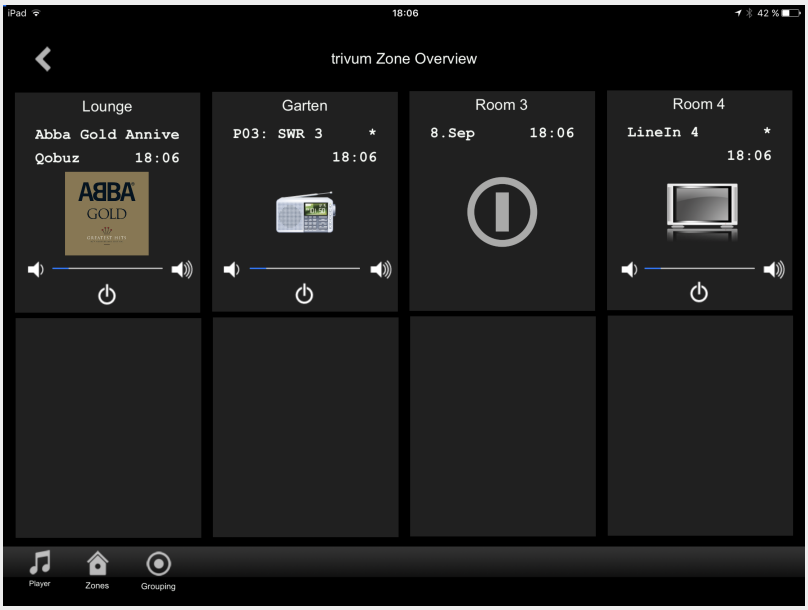
1.3.8. Page "Zone Select"



1.3.9. Page "Zone Grouping"



1.3.10. Page "Zone Overview"



2. Installing the driver

The driver is a .ZIP file. It includes the generic RTI driver (.rtidriver), an integration designer demo project file (.rti) and the documentation (.pdf).

2.1. Download

The drivers are available for download at trivum.

- The latest driver for V9.0x can be found at:
  trivum-rtidriver-v904.zip
- The current driver for V9.2x can be found at:
  trivum-rtidriver-v92x.zip

For the latest version info and changelog see: rti-changelog.rtf

This documentation describes the V9.2x driver. Please use this driver for new projects.

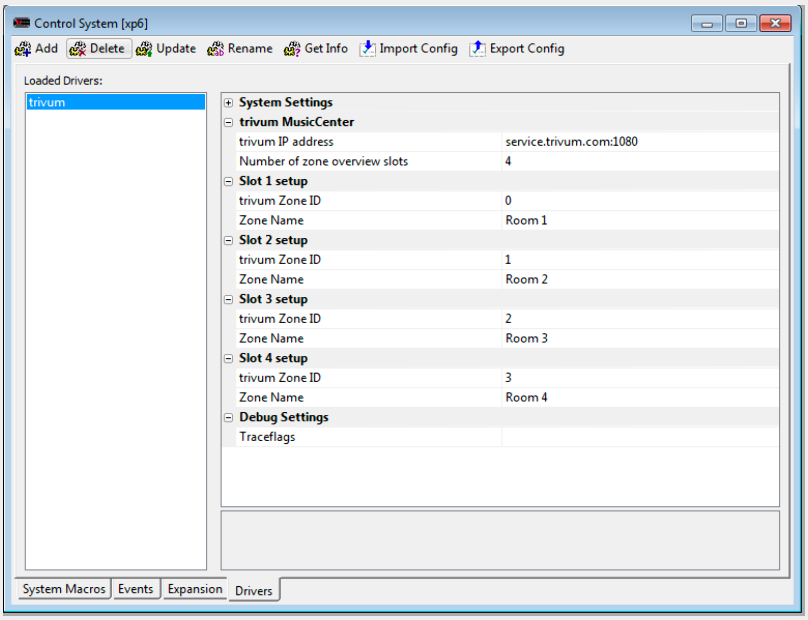
2.2. Integration Designer

Before you start to use the trivum RTI driver (.rtidriver) in your own projects, you should have a look into the trivum sample project in the Integration Designer. Please load it and test it on a Virtual Panel or the RtiPanel app. The project can serve as a template for your own GUIs.

The trivum RTI driver must be parameterized so that it works a customer installation. The main thing to do is tell the driver the IP address of the trivum music system. Further information is available in the chapter Parameters.

2.3. Parameters

The trivum V9.2x driver has the following parameters:



- ***"trivum IP address"***
  Please enter the IP address of the trivum system here

  1. You can also enter "service.trivum.com:1080" to access the online demosystem of trivum. This allows you to test the complete functionality of trivum on your RTI devices without having to own a trivum system.

- ***"Number of zone overview slots"***
  The driver has the possibility to display up to 8 zones simultaneously in a zone overview page. To do this, the IDs of the zones used internally by the trivum MusicCenter must be selected. For an easier overview during configuration in the Integration Designer, the respective zone name can also be specified. At runtime, however, the correct zone name provided by the trivum MusicCenter is used.

  Please note that with this zone overview definition, the zone selection is not restricted. In the "Zone selection menu" and in the "group menu" always all zones are available (as far as zones are not excluded in the trivum MusicCenter setup).

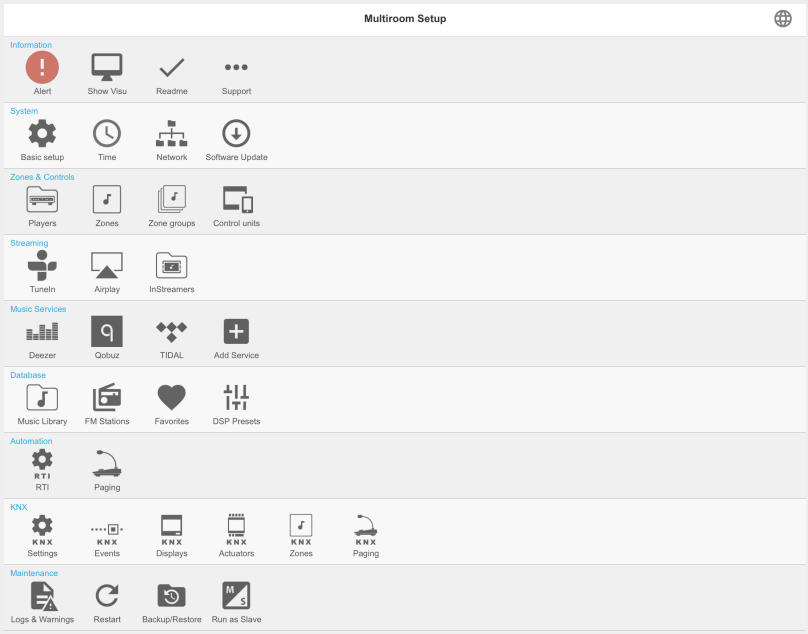
- Pro "Overview Slot"
  - ***"trivum ZoneID"*** The zone ID to be displayed. You can see the ID in the setup of the trivum MusicCenter. In the chapter Find Zone IDs, you will find out how to find the IDs.
  - ***"ZoneName"*** Please enter a meaningful name here. For an already existing trivum system, you should use the correct names of the zones. Please note that the zone name entered here is only used in the Integration Designer. At runtime, the correct names of the trivum MusicCenter are used.

3. trivum configuration

For accessing a trivum system from RTI, the trivum setup does not have to set anything. But it helps the overview and makes sure the configuration is correct.

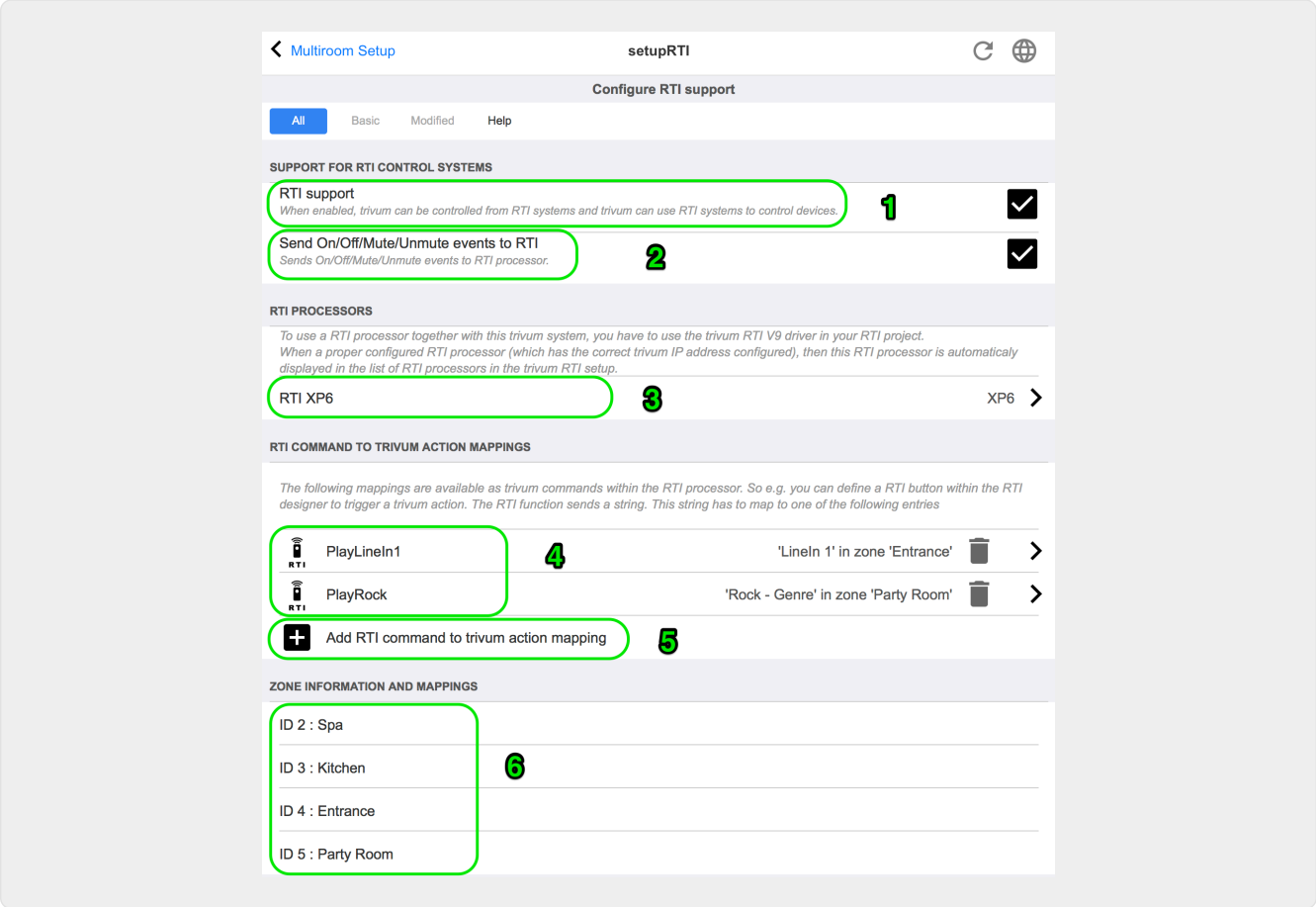
To configure the trivum MusicCenter, you need a web browser and the IP address of the trivum system.

Please call the configuration in the browser with "http://192.168.1.100/setup" (Please replace the IP address with the IP address of your system) Then you should see the trivum setup menu:



3.1. Setup

Please select "RTI" in the trivum MusicCenter Setup and activate RTI Support under <1>.



1 - Enable RTI support for the trivum device.

2 - If the RTI processor is to react to On / Off / Mute / Unmute events, then these options must be activated. The default GUIs used by trivum in the Integration Designer demo project do not need this option.

3 - List of the RTI processors that have registered the trivum MusicCenter as a partner and have established a connection.

+ Further settings can be made by selecting the processor. Especially the trivum-RTI event definitions are interesting.

4 - List of already defined "RTI Command to trivum action mappings".

In the KNX processor, a command can be sent to trivum, which triggers an action in the trivum. The command is a string.

5 - Create a new command action mapping.

6 - List of zones and their internal IDs.

These IDs can be used in the Integration Designer in the driver parameters.

3.2. Find zone IDs

Please refer to section 6, "Setup", under point 6. If you also use the status events (Mute / UnMute / On / Off) in the Integration Designer, the zone IDs must be used in the Overview Slots.

4. Functions of the driver

Many functions of the driver are required to implement a GUI to control a trivum system.

These are not discussed here in detail since they are used in the Integration Designer project file trivum-v92.rti and are self-explanatory.

4.1. Variables

Category	Variable	Comment
Selected Zone	Zone ID	
Selected Zone	Selected Zone Name	
Selected Zone	Selected Zone is On	
Selected Zone	Selected Zone is Off	
Selected Zone	Selected Zone is Muted	
Selected Zone	Selected Zone Volume	
Selected Zone	Selected Zone Display Line 1	
Selected Zone	Selected Zone Display Line 2	
Selected Zone	Selected Zone Track Position	
Selected Zone	Selected Zone Track Length	
Selected Zone	Selected Zone Track Percent	
Selected Zone	Selecged Zone Info Count	
Selected Zone	Selected Zone Info 1…8 Key	Variable exists 8 times
Selected Zone	Selected Zone Info 1…8 Value	Variable exists 8 times
Selected Zone	Selected Zone is playing LineIn	
Selected Zone	Selected Zone is playing Streaming	
Selected Zone	Selected Zone is playing Tuner	
Selected Zone	Selected Zone Status	
Selected Zone	Selecgted Zone Source	
Selected Zone	Selected Zone SourceMode	
Selected Zone	Selected Zone SourceType	
For each configured zone	Zone Name	
For each configured zone	Zone is On	
For each configured zone	Zone is Off	
For each configured zone	Zone is Muted	
For each configured zone	Zone Volume	

Category	Variable	Comment
For each configured zone	Zone Display Line 1	
For each configured zone	Zone Display Line 2	
Action descriptions	Action 1 … 16	Variable exists 16 times
Visible states	Player visible	
Visible states	Player positionbar visible	
Visible states	Music Menu visible	
Visible states	Popup Menu visible	
Visible states	Options Menu visible	
Visible states	Zone Menu visible	
Visible states	Overview slot 1…8 configured	Variable exists 8 times
Visible states	Overview slot 1…8 configured and zone is on	Variable exists 8 times
Message Window	Message Window visible	
Message Window	Message Window text	
Keyboard	Keyboard Area visible	
Keyboard	Keyboard ABC visible	
Keyboard	Keyboard 123 visible	
Keyboard	Keyboard abc visible	
Keyboard	Keyboard 123 text	
Keyboard	Keyboard text	
Systemwide	Menu header	
Systemwide	Popup header	
Systemwide	Connected	
Systemwide	NotConnected	

4.2. Lists

Category	Variable	Comment
Lists	Action List	
Lists	Zone List	
Lists	Zone List (available for group)	
Lists	Zone List (part of group)	
Lists	Menu List	
Lists	Popup List	

4.3. Dynamic Image

Kategorie	Variable	Bemerkung
Selected Zone	Selected Zone Coverart	
Selected Zone	Selected Button 1…4 Image	Variable exists 4 times
Per configured overview slot	Zone Coverart	

4.4. Driver Commands

Category	Name	Parameter	Description
Generic	Invoke trivum Mapped Action	Zone, MappingName	On the trivum page, there is a list of command action mappings in the RTI area. It is searched in the trivum the mapping which has the same name and the associated trivum action executed.
Generic	Invoke trivum Command by ID	Zone, CommandID	The command (e.g., 1 for Off) is sent to the specified zone in the trivum.
Generic	trace	Text	The text is added in the trivum trace
Generic	Restart Server		Quickly reboot the trivum system
Generic	Restart System		Complete restart of the trivum system
Control	Forward	Zone	Forward
Control	Backward	Zone	Backward
Control	FastForward	Zone	Fast forward
Control	FastBackward	Zone	Fast backward
Control	PlayPause	Zone	Play / Pause (only when playing stream)
Control	StationUp	Zone	Station up (only when playing tuner)
Control	StationDown	Zone	Station down (only when playing tuner)
Control	NextAlbum	Zone	Next album (only when playing library)
Control	PreviousAlbum	Zone	Previous album (only when playing library)
Control	NextPlaylist	Zone	Next playlist (only when playing library)
Control	PreviousPlaylist	Zone	Previous playlist (only when playing library)
Sources	DefaultStreaming	Zone	Changes to streaming
Sources	DefaultTuner	Zone	Changes to tuner
Sources	LocalSource	Zone	Changes to local source
Sources	LineInput	Zone, which	Changes to given line input

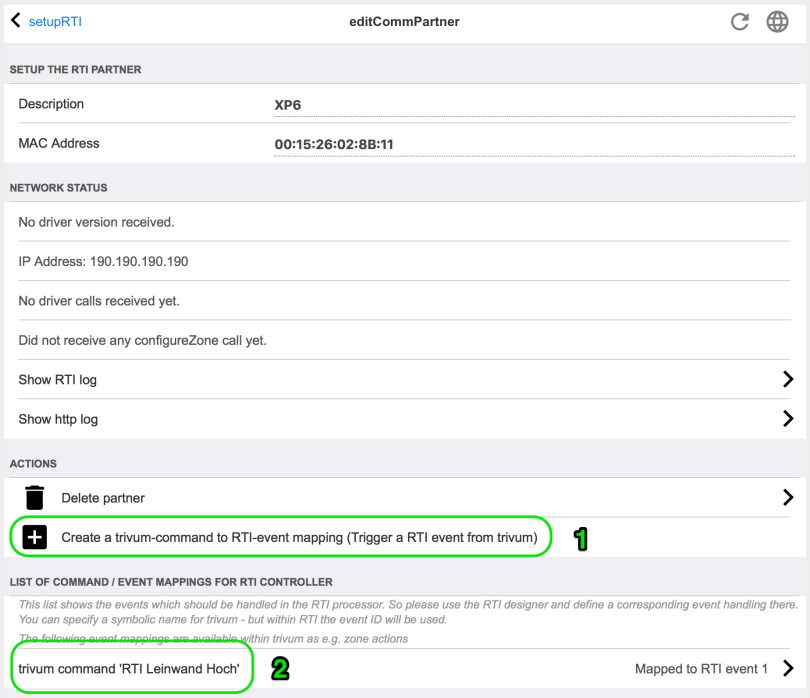
Category	Name	Parameter	Description
Group	Group 1…8	Zone	Grouped as described in the predefined zone group 1 … 8 (see trivum ZoneGroup setup)
Group	Ungroup 1…8	Zone	Stops group if the group is currently the predefined zone group 1 … 8.
Group	Ungroup	Zone	Stops current group
Zone	Volume -	Zone	Decreases volume in the zone
Zone	Volume	Zone	Increases volume in the zone
Zone	Volume absolute	Zone, value	Sets the specified volume in the zone
Zone	Mute toggle	Zone	Toggle mute in zone
Zone	Power off	Zone	Turns off the zone
Zone	NextSource	Zone	Switches to the next source in the zone. If Zone is off, the power is turned on and the last source is played.
Zone	Power off all		Turns off all zones
Zone	Snooze	Zone	Snooze
Run action	1…16	Zone	Executes the action 1 … 16 stored in the definition of the RTI Zone.

4.5. Command to Action Mapping

In the driver command section "Generic" there is "Invoke trivum Mapped Action". The "PlayRock" command is defined in the chapter Setup under item 4. He starts streaming with the genre "Rock". Therefore, the Invoke trivum Mapped Action command must be used in the Integration Designer. "PlayRock" should be entered as "Text" parameter. The trivum system finds the correct command.

4.6. Call RTI from trivum

There is also the possibility that an RTI command is invoked from trivum.

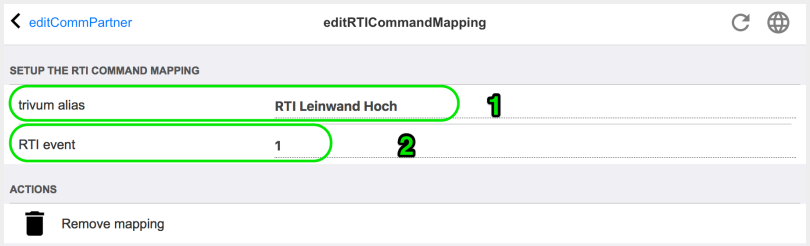


For example, a screen or other device controlled by RTI, then the RTI programmer can connect one of the 32 "from trivum mapped command" to the RTI macro. This RTI macro then implements, for example, that the screen is driven down. In the trivum system the actions can use in the RTI processor section the event with the corresponding number.

1 - Create a new empty Command / Event Mappings

2 - List of already created mppings for this RTI processor

Thus you can use the TouchPad and its action bar, to easily control devices via RTI.



1 - This name is used internally with trivum alt action name

2 - Since RTI events can only be triggered by numbers, this is the event number which must be used in the RTI Integration Desigener under "Events" to link an RTI macro.

5. Find errors

5.1. RTI Tracetool

From RTI itself there is a "TraceViewer.exe" for the error search. This can be suitable for problems with RTI projects. Please use the RTI support resources to get help with Integration Designer, the tools and the concepts to get RTI.

5.2. trivum Tracetool

The trivum RTI driver can be traced using the trace tools that can be downloaded from the trivum support website. This is only experienced trivum users highly recommended. Please enter the IP address of your RTI XP processor behind "trace". If a trivum RTI driver is running on the processor, it will report in the trace.

5.3. trivum RTI Log

The trivum MusicCenter writes some relevant RTI related data to a RTI log. This RTI log is found under "RTI" and then under the corresponding RTI processor. It can be useful to see which commands / events have been sent / received from and to the trivum system.

5.4. trivum Support

For questions, you can use our support area at http://service.trivum.com.

If you have a problem / error then you can use our ticket system: Create a support ticket