R&S®VENICE 2U

User Manual (Administration & Configuration)

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ROHDE&SCHWARZ

Broadcast and Media

User Manual
(Administration & Configuration)

Document	User Manual (Administration & Configuration)
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Contents

General

This chapter is divided into following sections:

About this documentation

This document describes how to administer and configure the VENICE 2U.

Required Reading

The client company and operator of the system are advised to read this manual, and to follow the instructions. Each person who is responsible for setting up the system have to read and understand this manual.

Target Group

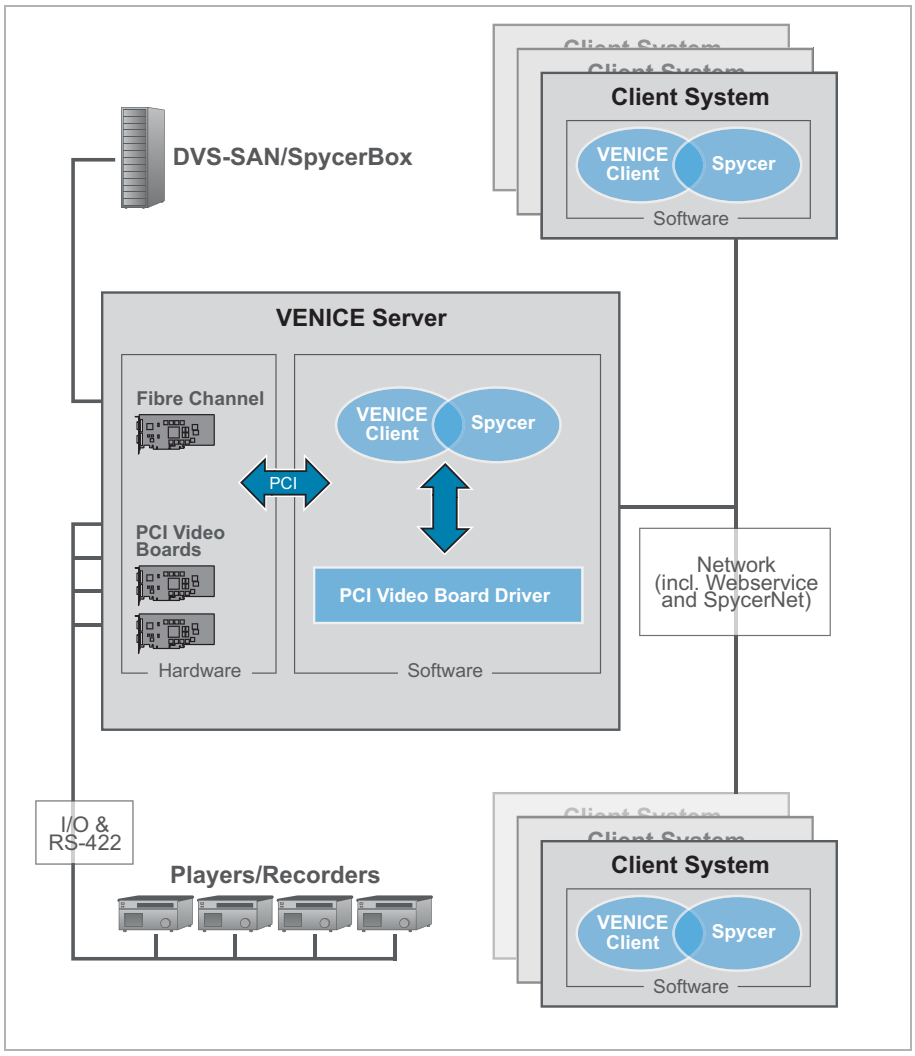
This manual is intended for the system administrator charged with the task to set up and administer the VENICE server.

Abbreviations

NFS	Network File System
NIC	Network interface controller
OID	Object Identifier
PCIe	Peripheral Component Interconnect Express
SNMP	Simple Network Management Protocol

VENICE 2U System in a Network

The diagram below shows a possible setup of a VENICE 2U in a network as well as a sketch of the structure of the VENICE 2U and its software, thereby indicating the relation and communication processes between the individual parts:



Structure of VENICE and network setup

VENICE Server

Hardware

The PCIe video boards and their driver provide the functionality of the system for its usage as a video server. The PCIe video board driver controls the installed Rohde & Schwarz GmbH & Co. KG video boards (video channels) and thus the in- and output of video and/or audio signals. Each video board provides two video channels. Furthermore, it enables the master/slave mode, where the respective video channel of VENICE 2U can either be controlled by an other device (e.g. a VTR).

Server Software

The VENICE 2U server software installed on the system provides the video server capabilities for the locally or remotely installed VENICE 2U software. It communicates directly with the PCIe video board driver and therewith administrates the video channels of the system as well as directs the in- and output of each channel. For example, it determines whether one channel is free to be used or already occupied and what the respective channel should do (ingest/playout). It is installed as a service (demon) and will be operational shortly after the VENICE 2U server has been started.

VENICE Client Software

The VENICE client software is the operator's interface to the server/video channels.

Client System

Hardware

The client system can be a Linux, Windows or Mac workstation. With the VENICE client software on it the operator can connect to the server via network and allocate the video channels to control ingest or playout operations.

VENICE Client Software

The VENICE client software is the operator's interface to the server/video channels. It can be installed on any network client system for remote control of the server. With one instance of the software you can control different video channels of one or more VENICE 2U servers at the same time. You can also run several instances of the software in parallel to control different video channels.

Spycer

The data management software ‘Spycer’ (a product by Rohde & Schwarz GmbH & Co. KG) is also installed on your VENICE 2U. Spycer is seamlessly integrated in the VENICE software for file management purposes. e.g. file browsing or path selection. It is available as a stand alone license as well.

With Spycer you can manage any content stored on the system or a connected storage easily. It is a software application capable of handling large amounts of video data and their corresponding metadata, providing you with integrated browse, search and management tools to retrieve data and gather information about them locally as well as via a network (Webservice & SpycerNet). Additionally, Spycer can be used to preview clips.

Spycer on the VENICE 2U server provides a basic feature set. On a client system Spycer must be installed separately. Furthermore, for the full feature set a license must be available, otherwise it will run as Spycer Basic (basic features only). Further information about Spycer can be found in the Spycer user guide.
The record scheduler is part of the Spycer user interface but provides its features for VENICE.

Other Systems in the Network

VENICE 2U is an open system. If the native storage of the VENICE 2U is not large enough, it can be expanded easily by connecting further storage systems by
Rohde & Schwarz GmbH & Co. KG, such as SpycerBox Cell.
External storage systems can be integrated via standard-mounts like SAMBA or NFS.

Full capacity is only guaranteed with systems by Rohde & Schwarz GmbH & Co. KG.

For sharing of content with the VENICE 2U server via other connections than an Ethernet connection (e.g. StorNext storages via fibre channel) third-party software and/or licenses may be required.

If you want to use external device (e.g. USB flash disk) with the VENICE 2U note the following: Before removing the external device, you have to choose „eject disk“ from the context menu of the USB drive's icon. Otherwise data may be lost.

Important Notes

Note the following:

- Only use the video drive (main storage) or recommended storage solutions by Rohde & Schwarz GmbH & Co. KG to store video and audio data. Other storage locations may be too slow for real-time operations.
- The real-time capability of the VENICE 2U to a large extent depends on the performance of the system's hardware. Therefore, it is recommended to terminate all other programs on the VENICE 2U system while working with VENICE 2U.
- The installation of third-party software on the VENICE 2U may disrupt the real-time capability and/or limit the functionality of your system.
- You can copy files from one system to another by using a simple drag and drop operation. Please note, when copying/moving or deleting files, the affected channels might still show the content e.g. in the video overlay without physically referencing to it.
- Network/Switch Configuration:
  If the MTU is set to 9000, you have to set this on every VENICE 2U client as well.
- If you want to make use of the SpycerNet, you have to enable multicast support on the network switch.
- If NIC bonding is required set bonding mode to 4 / 802.3ad for fault tolerant operation. Please make sure that the switch you use supports this configuration.

Configuration

This chapter is divided into the following topics:

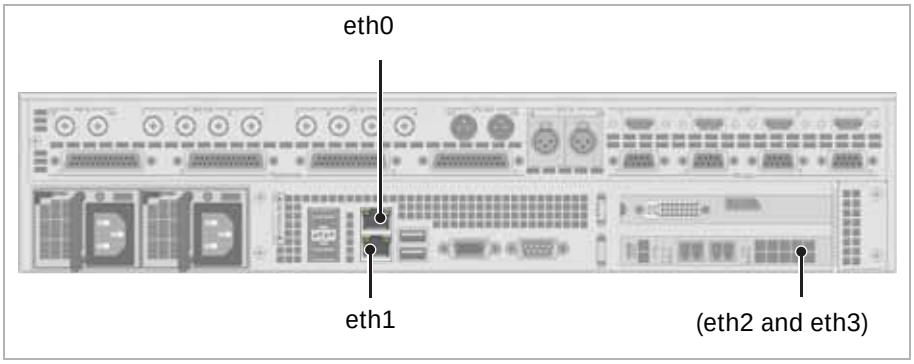
Network Configuration

You have to configure the server's IP address to connect it to your local network. Ex factory the VENICE is already preconfigured for a network usage and can be used immediately with this. However, in case you want to alter the configuration to adapt it to your local network, you can configure it easily.

The locally installed VENICE client software has to connect to a video channel on the VENICE server the same way as a remote installed software, i.e. it connects via network using the configured IP address.
In this case always a loopback is performed to avoid network traffic.

Delivery Status

The network ports of the VENICE server and its software are ex factory preconfigured:



Ethernet ports on VENICE 2U

Port	Configuration
eth0	static, 10.0.0.8/24
eth1	dynamic, DHCP
eth2 and 3	optional

Checking the VENICE Configuration

The Configuration can be checked via a configuration tool or via the command line.

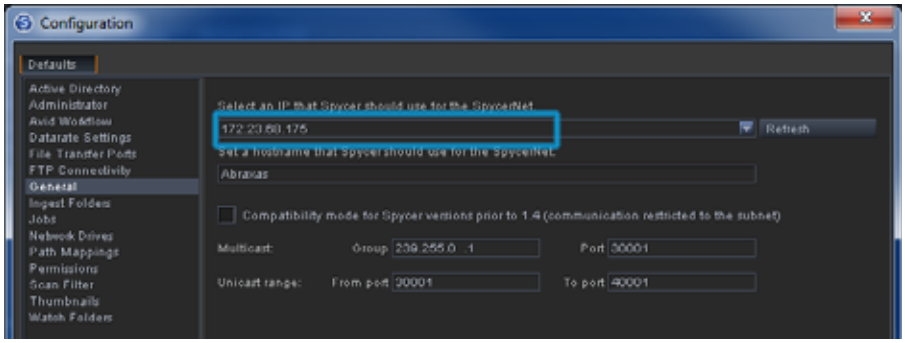
Network Interface Configuration

For individual configuration of all interfaces see: ‘Interface Configuration Files’ in the RHEL6 documentation on:
https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/6/html/Deployment_Guide/s1-networkscripts-interfaces.html

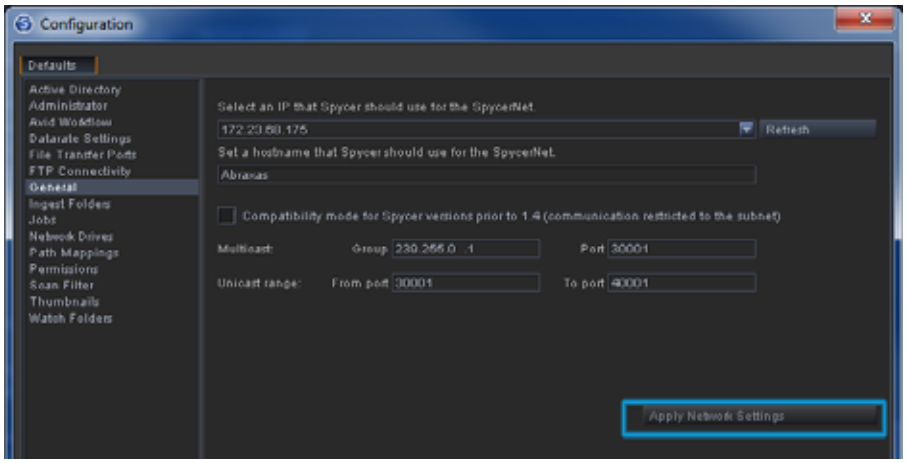
Select Interface for VENICE Service

Perform the following steps:

1. Log on as admin
   - The system will ask you for the root password (’venice‘).
2. Start Spycer.
3. Open the main menu **OPTIONS** > **CONFIG** (or simply press the [F4]).
4. Select the desired IP address within the **GENERAL** tab.



5. Click **APPLY NETWORK SETTINGS**.



   - You will be prompted to restart the VENICE server. Apply the question with **yes**.

6. Follow the instructions given on the screen to restart the different services (VENICE, SpycerAgent and SpycerWebService).

7. Log off root user.
   For further operation use the standard venice user account.

The VENICE server software as well as the Spycer software is bound to the physical Ethernet port to which the configured IP address belongs. If you later on change the IP address, you have only to restart the services like described above.

The network configuration for the VENICE server as well as for the Spycer software is located in the following file:
`/etc/opt/DVS/Network.conf`
Normally this file does not need to be edited manually. If you make any changes you have to restart the services like described above.
The network configuration file must be structured like:

```
[Interface]
MAC=12:34:6A:4F:17:EE
```

Checking the VENICE server network configuration

Via command line you can check the status of the network configuration for the VENICE server software.

Perform the following steps:

1. Open the command line.
2. Get the status via:
   `/opt/DVS/Venice/bin/dvsnetconfig --status`

You will get the path of the configuration file and the status of the network configuration.

Configuring Spycer Software

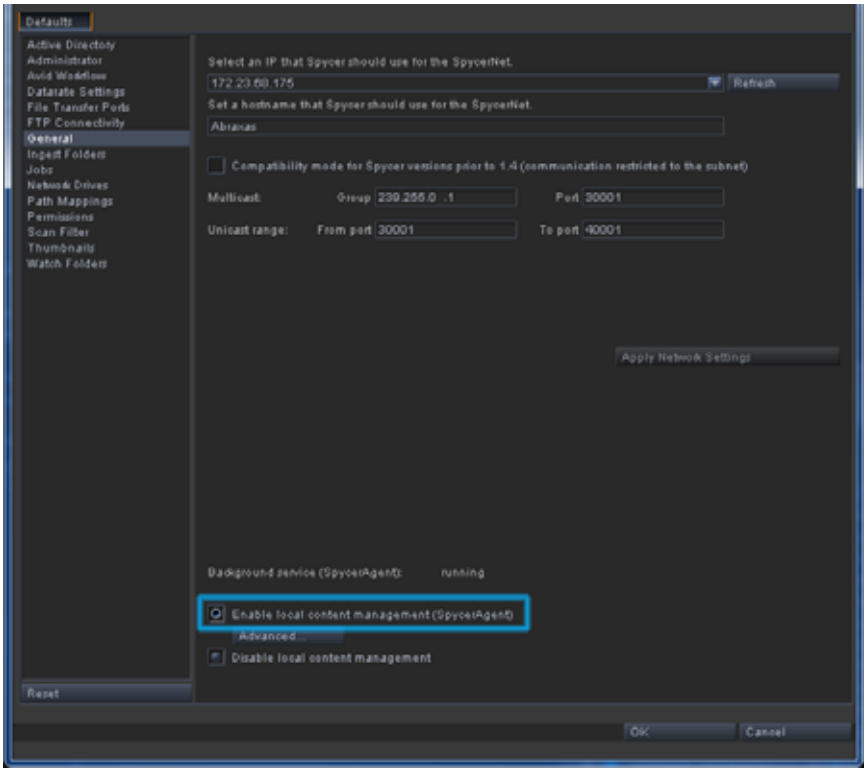
To get the full functionality for the VENICE, the Spycer software must already be configured.

For further information about Spycer and its configurations see the ‘Spycer’ documentation.

Enable SpycerAgent and assign IP

Perform the following steps:

1. Start Spycer.
2. Open in menu **OPTIONS** > **CONFIG...**.
3. Activate in **GENERAL** the check-box **Enable local content management (SpycerAgent)**.



4. Select the IP that Spycer should use for the SpycerNet.

5. Confirm with OK.

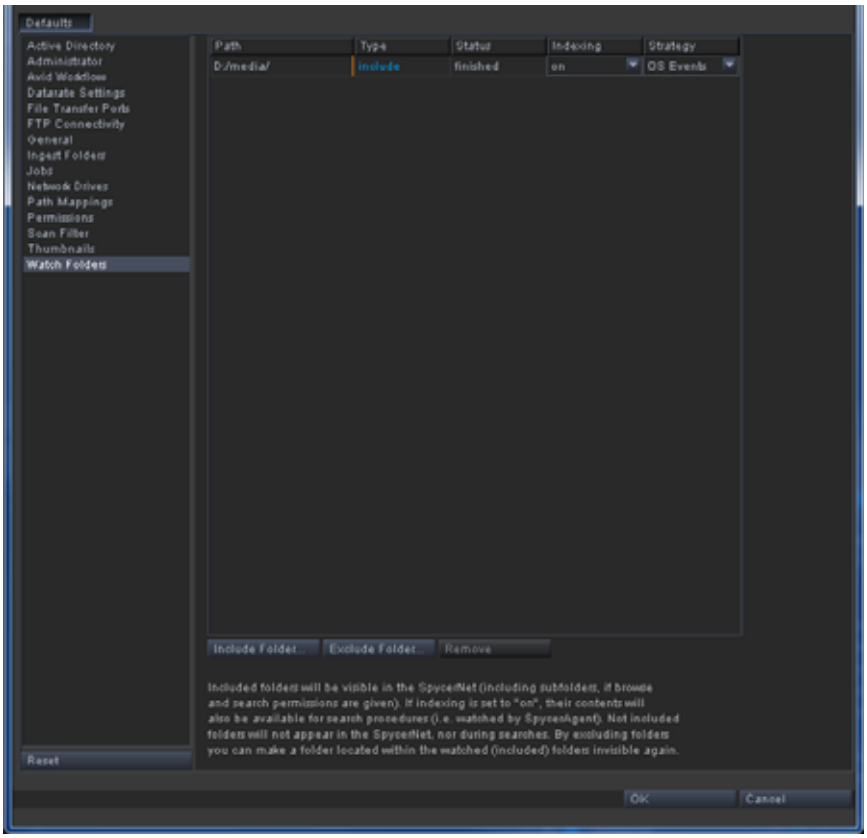
Local content management is enabled. The IP for SpycerNet is set.

Assign Watch Folders

Perform the following steps:

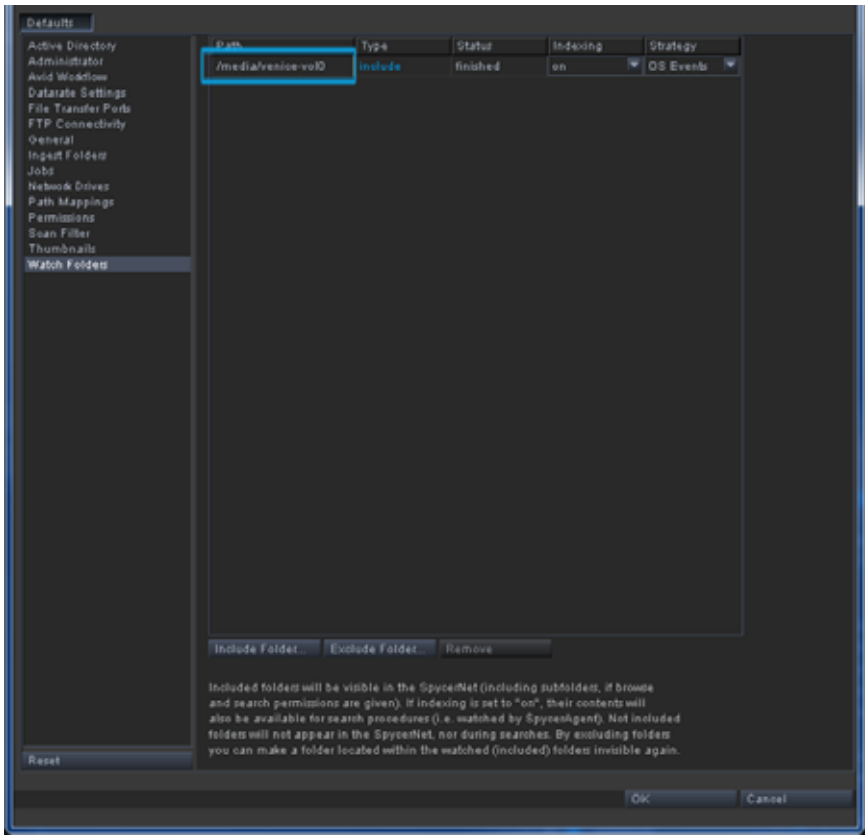
1. Start Spycer.
2. Open in menu **OPTIONS** > **CONFIG...**.

3. Set in **WATCH FOLDERS** the local audio and video storage location(s) of the VENICE server as watch folders by clicking on **Include Folder...**.



A directory browser window will be opened.

4. Select the storage location of the folders you want to watch and confirm with **Choose**.
   - Your selected watch folder now will be displayed in **WATCH FOLDERS**. Immediately you can activate or deactivate the folder by clicking on or off.



5. Confirm with OK.

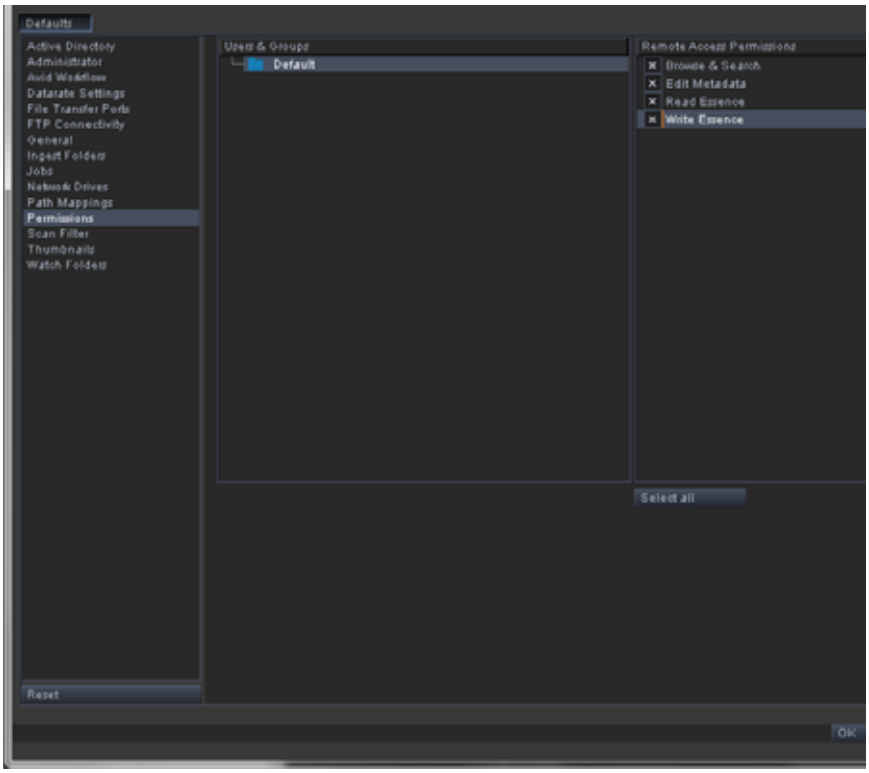
All necessary watch folders are assigned.

Activate Permissions

Perform the following steps:

1. Start Spycer.
2. Open in menu **OPTIONS** > **CONFIG...**.

3. Activate t in **PERMISSIONS** the remote access permissions by clicking on it.



4. Confirm with OK.

The permissions will be activated.

System Monitoring

SNMP

The Simple Network Management Protocol (SNMP) is a standard internet protocol for the device management in IP networks. SNMP allows you to e.g. monitor and query the state of several VENICE devices in a network or single parts of the hardware. VENICE provides a **NET-SNMP-EXTEND-MIB** file and an **LSI-AdapterSAS** file that give you the opportunity to query the state of the system or parts of it, using the Simple Network Management Protocol (SNMP).

To query the system, it is recommended to install a standard MIB browser on an external monitoring device where you have to set the IP address of the VENICE server. The system's minimum and maximum limits are predefined by
Rohde & Schwarz GmbH & Co. KG and have to be entered into the respective fields in the MIB browser. You find all necessary information in the **NET-SNMP-EXTEND-MIB** file and the **LSI-AdapterSAS** file that refers to the RAID controller in the path **/usr/share/snmp/mibs** on the VENICE 2U server. By loading the **NET-SNMP-EXTEND-MIB** and the **LSI-AdapterSAS** files in the MIB browser, it is then possible to query the state of the system.

Configuration of SNMP Monitoring

Perform the following steps:

1. Copy the **NET-SNMP-EXTEND-MIB.txt** and **LSI-AdaptErSAS.mib** (monitoring of the LSI adapter) files on your monitoring device and load the MIBs in your MIB browser. The path to the files is: **/usr/share/snmp/mibs**.
2. In the left container of your MIB browser you can follow the path to start the query. Navigate to:
   MIB tree > Private > enterprises > netSnmp > netSnmpObjects > nsExtensions > nsExtendObjects > nsExtendOutput2Table.

Setup and configuration of SNMP is completed.

Querying the States Using OIDs

To query the states of the VENICE 2U hardware, you can either use an MIB browser or an SNMP monitoring software. When using a monitoring software, you will have to enter all OIDs once to be able to monitor the hardware's state continuously. You will be able to define critical values and configure an e-mail notification as well.

LSI-Adapter-SAS

OID	Object	Value
.1.3.6.1.4.1.3582.4.1.4.3.1.2.1.5.0	System disk array (array 1)	offline(0), partially-degraded(1), degraded(2), optimal(3)
.1.3.6.1.4.1.3582.4.1.4.3.1.2.1.5.1	Meta-data disk array (array 2)	
.1.3.6.1.4.1.3582.4.1.4.3.1.2.1.5.2	Data disk array (array 3)	

NET-SNMP-EXTEND-MIB

Fan		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.49.65.49	FAN1A	Rounds per minute in RPM
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.49.66.49	FAN1B	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.50.65.49	FAN2A	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.50.66.49	FAN2B	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.51.65.49	FAN3A	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.51.66.49	FAN3B	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.52.65.49	FAN4A	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.52.66.49	FAN4B	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.53.65.49	FAN5A	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.53.66.49	FAN5B	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.54.65.49	FAN6A	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.6.70.65.78.54.66.49	FAN6B	

CPU		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.7.67.80.85.76.72.48.49	CPU0	Temperature in °C
.1.3.6.1.4.1.8072.1.3.2.3.1.1.7.67.80.85.76.72.49.49	CPU1	

InletM		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.7.73.110.108.101.116.77.49	InletM	Temperature in °C

CPU-Voltageregulators (VRD)		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.7.86.82.68.76.72.48.49	VRD0	Temperature in °C
.1.3.6.1.4.1.8072.1.3.2.3.1.1.7.86.82.68.76.72.49.49	VRD1	

AddinCard		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.11.65.100.100.105.110.67.97.114.100.49.49	Addin-Card1	(Inlet) Temperature in °C

Plattform Controller Hub (PCH)		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.11.80.67.72.95.85.110.110.101.115.115.49	PCH	Temperature in °C

PSUs		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.11.80.83.85.49.95.83.116.97.116.117.115	PSU1	Presence detected, Failure detected
.1.3.6.1.4.1.8072.1.3.2.3.1.1.11.80.83.85.50.95.83.116.97.116.117.115	PSU2	

+5V Volage		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.12.86.79.76.84.65.71.69.95.43.53.86.49	+5V	Voltage in V

3V Stand-by-Volage (3VSB)		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.13.86.79.76.84.65.71.69.95.51.86.83.66.49	3VSB	Voltage in V

CMOS-Battery Voltage (VBAT)		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.13.86.79.76.84.65.71.69.95.86.66.65.84.49	VBAT	Voltage in V

3VMAIN Voltage		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.15.86.79.76.84.65.71.69.95.51.86.77.65.73.78.49	3VMAIN	Voltage in V

RAM		
OID	**Object**	**Value**
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.49.95.48.48.49	RAM_00	Temperature in °C
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.50.95.48.49.49	RAM_01	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.51.95.48.50.49	RAM_02	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.52.95.48.51.49	RAM_03	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.53.95.48.52.49	RAM_04	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.54.95.48.53.49	RAM_05	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.55.95.49.48.49	RAM_10	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.56.95.49.49.49	RAM_11	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.57.95.49.50.49	RAM_12	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.65.95.49.51.49	RAM_13	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.66.95.49.52.49	RAM_14	
.1.3.6.1.4.1.8072.1.3.2.3.1.1.8.82.65.77.67.95.49.53.49	RAM_15	

Setting Up Email Notifications

This section describes how to set up email notifications for a single system. If you want to monitor multiple systems by email, you must complete the tasks in this section for each one separately.

To set up email notifications

Perform the following steps:

1. Open the **MegaRAID Storage Manager** on your VENICE 2U.
2. From the menu select **TOOLS > MONITOR CONFIGURE ALERTS**.
3. Select the **MAIL SERVER** tab.
4. Enter the ‘From’ address that you want to appear in your email notifications into the **SENDER EMAIL ADDRESS** field. If an email recipient will be replying to email notifications, be sure that the ‘From’ address belongs to a system that is actively monitored..
5. Enter the IP address of your SMTP server into the **SMTP SERVER** field.
6. Enter the server's port number (or use the default port).
7. Select **THIS SERVER REQUIRES AUTHENTICATION**, then enter the SMTP server's login credentials (username/password) in the space provided, if authentication is enabled on your SMTP server.
8. Select the **EMAIL** tab.
9. Enter the ‘To’ address into the **NEW RECIPIENTS EMAIL ADDRESS** field.
10. Confirm with **Add**.
11. Repeat this step to add more email recipients. Each recipient appears in the **RECIPIENTS EMAIL ADDRESSES**.
12. When you're done, confirm with **OK**.
13. Repeat the steps in this section for each system you want to monitor with email notifications, then continue by sending test messages to all recipients (see "Sending a Test Message" on page 30).

The email recipients and your SMTP server settings are saved.

Sending a Test Message

To ensure that an email recipient is receiving event notifications, you can send them a test message.

To send a test message:

Perform the following steps:

1. Open the **MegaRAID Storage Manager** on your VENICE 2U.
2. From the menu select **TOOLS > MONITOR CONFIGURE ALERTS**.
3. Select the **EMAIL** tab.
4. Select the email addresses to send a test message to.
5. Send the message with **Test**.
   - If the test is successful, the email recipient(s) receive the test message.

If the test fails:
Ensure that the recipient's email address is correct.
Ensure that your SMTP server address is correct.
Try sending the test message again.

Disabling Email Notifications

This section describes how to disable email notifications on a selected system.

If you disable email notifications, events continue to be generated but email messages won't be sent.

Perform the following steps:

1. Open the **MegaRAID Storage Manager** on your VENICE 2U.
2. From the menu select **TOOLS > MONITOR CONFIGURE ALERTS**.
3. Select the **EMAIL** tab.
4. Delete the email address you won‘t get messages to.
5. Confirm with **OK**.

The email notification is disabled.

Administration

This chapter is divided into the following topics:

Updating the VENICE Software

During the service life of the VENICE 2U server it may be required to update its software. The update will be performed with the standard RPM installation package for VENICE 2U. It will contain the latest versions of the PCIe video board driver, the VENICE 2U server software as well as the locally installed VENICE software.

For more information see the user manual for installation (included in the installation package). Actual Software packages available on **https://gloris.rohde-schwarz.com**.

Updating the Firmware

During the service life of the VENICE server it may be required to update the firmware of the PCIe video boards on the VENICE server. The update will be performed by running a command line updater application. It will contain the latest versions of the PCIe video board firmware.

A firmware update can only executed with a valid license.

For updating the firmware on the VENICE server it is recommended to update the VENICE server software.

Depending on the installed video board type it is necessary to install different firmware versions. Check the video board in the Control Panel and contact Rohde & Schwarz GmbH & Co. KG for the respective firmware file.

Perform the following steps:

1. If applicable, open a command line (terminal) and log on to the system as root (e.g with su -).
2. Switch to the directory that contains the new installation file.
3. Then first execute the command:
   `chmod 777 <firmware_version>`
   (e.g. **`chmod 777 atomixhdmiup_7.5.0.1_7.0.10`**)
   to change the permissions of the file to read, write, and execute for all.
4. Enter **`./<firmware_version>`** in the command line to start the installation process
   - The system will ask you whether to change the firmware on one video board or both installed video boards.
5. Press y (one card) or a (all cards) and then [Enter] to continue.

   If you want to abort the process at his point, press any other key and [Enter].
6. Heed the instructions on the screen.

After having shut down and then started the system again, the firmware on the PCIe video boards of the VENICE 2U server should be updated.

The system must be shut down and then started again, rebooting the system is not enough.

Gathering Log Files

To aid debugging, log files can be created which detail the actions performed by and with the system. You may get asked by Rohde & Schwarz GmbH & Co. KG to send in these files in case of problems with VENICE 2U. The logging of actions can be controlled with the dvslogwatch service. This service allows you to create log files from the server which detail the actions performed by and with the VENICE server. They will be saved at a location of your choice in an archive file.

There are two ways to get VENICE client log files:

- You can use the option **GATHER LOGS...** in the menu **HELP** of the VENICE client software to create an archive file containing the log files of the respective VENICE server. This option captures a rather short period (max. 4 MB) of the current system status.
- If you need the log files of a longer period of time, use the Maintenance Tool by Rohde & Schwarz GmbH & Co. KG. With it you can gather logwatch log files (detailed real-time log files) from the VENICE server.
  Actual Maintenance software packages available on **https://gloris.rohde-schwarz.com**.

Due to the relative short timeframe of logged actions by and with the VENICE server it is recommended to gather log files immediately after a problem with the server has occurred.

Creating a Backup Image

The VENICE 2U contains an internal USB flash drive that can be used to restore the operating system on the system disk back to its manufacturing state. Once selected as a boot device, it will launch a rescue system which in turn will restore the system disk.

Perform the following steps:

1. If appropriate, disconnect all fibre channel cables and all externally connected storage devices from the system.
2. Turn on the VENICE 2U. At the indicated moment during start-up you have to press **[F4]** to enter the boot menu.
   - The boot menu is displayed on the screen.
3. Select the internally installed USB flash drive as the boot device.
4. Press **[Enter]**.
   - The system will boot from the internal USB. You will see a window on the screen where you can select the R&S DVS Rescue environment for loading.

To complete the loading of the R&S DVS Rescue environment some user entries are required. For this follow the instructions given on the screen.

The loading of the environment and the process itself will both try to initialize hardware that may not be present on your system. Any error messages displayed during loading/initialization, e.g. Failed or Warning, can be disregarded. The backup/recovery process should work nonetheless.

5. Select DVS Rescue and press **[Enter]**.
   ➔ If you do not perform any action, DVS Rescue will be loaded automatically after 30 seconds.
   ▸ Once the loading has finished, you will see the R&S DVS Rescue script with its options on the screen. Your display should look similar to the following:

```
--- DVS Rescue ---

1 - Backup on internal USB device
2 - Restore from internal USB device
3 - Reboot the system
4 - Poweroff the system

0 - Exit

Enter selection:
```

6. To create a backup image of your system disk and save it to the internal USB, press **[1]** and then **[Enter]**.
   ▸ A list of possible target devices will be detailed on the screen. The system disk normally is the 'ATA' disk with, for example, 'sda', 'sdb' or 'sdc' as its device name (e.g.: **`1:0:0:0 disk ATA <device info> /dev/sda`**).

7. Enter the system-device (for example **sda**).

Ex factory the VENICE 2U will be delivered with 'sda' as the default system disk. If other configurations have been made later or on customer request, this may be different.

Data Loss

The actual device name of the system disk depends on the manufacturing process. A recovery will overwrite all your data.

Continue with the following steps only if you are able to identify the correct target device.

8. Enter the name of the system disk: Type in e.g. **sda** (or in other cases **sdb**, **sdc**, etc.) and press **[Enter]**.
   ▸ The system will ask you to enter the image name for the backup image to be saved to the USB drive. By entering the name of an already existing backup image you can overwrite it.

9. Type in the name of the image you want to save to the USB for a later recovery. To confirm your entry press **[Enter]**.
   - The system will ask you to confirm your selection and whether you want to continue:

To abort the process at this point enter **n** for ‘no’ and press **[Enter]** on your keyboard. You will be redirected to the DVS Rescue script.

After starting the process a termination is no longer possible.

10. To start the backup process type in **y** for ‘yes’ and press **[Enter]**.
    - The program starts the backup process. Its progress will be indicated on the screen.

The recovery process may take some time.

If during the process the screen turns black, press **[Space]** to get it back again.

When the system has finished the backup process, you will be notified. Then after pressing **[Enter]**, you will be redirected to the R&S DVS Rescue script once more where you can choose, for example, ‘reboot’ or ‘poweroff’ to restart or turn off the system. The next time the system is started, it will load the restored operating system.

Restoring the System

NOTICE

Total Loss of Data

Selecting the wrong device for restoring the system partition will lead to a total loss of data.

Do not execute any commands if you are not sure about the correct target device.

Perform the following steps:

1. If appropriate, disconnect all fibre channel cables and all externally connected storage devices from the system.
2. Turn on the VENICE 2U. At the indicated moment during start-up you have to press **[F4]** to enter the boot menu.
   - The boot menu is displayed on the screen.
3. Select the internally installed USB flash drive as the boot device.
4. Press **[Enter]**.
   - The system will boot from the internal USB. You will see a window on the screen where you can select the R&S DVS Rescue environment for loading.

To complete the loading of the R&S DVS Rescue environment some user entries are required. For this follow the instructions given on the screen.

The loading of the environment and the process itself will both try to initialize hardware that may not be present on your system. Any error messages displayed during loading/initialization, e.g. Failed or Warning, can be disregarded. The backup/recovery process should work nonetheless.

5. Select DVS Rescue and press **[Enter]**.
   ➔ If you do not perform any action, DVS Rescue will be loaded automatically after 30 seconds.
   - Once the loading has finished, you will see the R&S DVS Rescue script with its options on the screen. Your display should look similar to the following:

```
--- DVS Rescue ---

1 - Backup on internal USB device
2 - Restore from internal USB device
3 - Reboot the system
4 - Poweroff the system

0 - Exit

Enter selection:
```

6. To restore your system disk from the internal USB, press **[2]** and then **[Enter]**.
   - A list of possible source devices will be detailed on the screen. The system disk normally is the 'ATA' disk with, for example, 'sda', 'sdb' or 'sdc' as its device name:
     (e.g.: `1:0:0:0 disk ATA <device info> /dev/sda`).

7. Enter the system-device (for example **sda**).

NOTICE

Data Loss

The actual device name of the system disk depends on the manufacturing process. A recovery will overwrite all your data.

Continue with the following steps only when you are able to identify the correct target device.

8. Enter the name of the system disk: Type in e.g. **sda** (or in other cases **sdb**, **sdc**, etc.) and press **[Enter]**.
   - Another list will be displayed on the screen detailing the possible source images. If there is only the R&S DVS recovery image on the USB flash drive, this one will be listed. If there are several images, all will be displayed.

9. Select the image you want to use for the recovery. Usually, it provides the serial number of the VENICE 2U in its name. To confirm your choice press **[Enter]**.
   - The system will ask you to confirm your selection and whether you want to continue:

10. To start the recovery process type in **y** for ’yes’ and press **[Enter]** on your keyboard.
    - The program will now start the recovery process. Its progress will be indicated on the screen.

To abort the process at this point enter **n** for ’no’ and press **[Enter]** on your keyboard. You will be redirected to the DVS Rescue script.

After starting the process a termination is no longer possible.

The recovery process may take some time.

If during the process the screen turns black, press **[Space]** to get it back again.

When the system has finished the recovery process, you will be notified. Then after pressing [Enter] on your keyboard, you will be redirected to the DVS Rescue script once more where you can choose, for example, ’reboot’ or ’poweroff’ to restart or turn off the system. The next time the system is started, it will load the restored operating system.

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