



MANUAL

Meinberg Protocol Simulation mpsv2

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Meinberg Radio Clocks GmbH & Co. KG

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1 Imprint

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3 Introduction

Congratulations that you have purchased the Meinberg Protocol Simulation Software.

This manual explains the most important simulation functions and will help you get started. The simulation software allows tests of NTP-time servers, NTP-clients, PTP-time servers, PTP switches and many other devices for network synchronization. Amongst other these devices can be tested on general functionality in relation to the appropriate protocol, response time, packet loss rates and responses to failure or the handling of increased load. By using a suitable and well equipped system, you can for example simulate about 1.000.000 NTP clients or up to 500 PTP slaves at full rate.

The following simulation modes are supported by the software:

NTP Clients (IPv4, IPv6) NTP Server (IPv4, IPv6)

PTPv2 (IEEE 1588-2008)

Unicast Slaves (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) Unicast Masters (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) Unicast Controllers (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) Multicast Slaves (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) Multicast Masters (IEEE802.1/Ethernet Layer 2, IPv4, IPv6)

In this manual you will first be explained, in a "Quick start guide", how to start the simulation service.

After that, the structure of the main dialogs of the remote control interface (mpsrc) and the most important functions of how to set up a connection and the configuration of the simulation will be described in detail.

Should you notice any mistakes in the handling of the software, please help us to correct them, by writing an e-mail to support@meinberg.de. Thank you very much for your help and have fun using the Meinberg Protocol Simulation!

4 Basics

4.1 USB Live Linux

The simulation is delivered on a USB stick, with a bootable Linux live system. Via this system, you can start the software on any 64bit-systems without installation effort.

4.1.1 Boot procedure

Insert the USB stick with the imprint "Meinberg" into one of your USB ports and restart the system. Make sure that in the BIOS, the booting of USB sticks is activated and that the USB stick is at top priority of the boot order.

The following boot menu should appear on your screen if the boot order was correctly configured.



Now, you can choose between graphical user interface "MPS Live Linux (desktop)" or terminal mode "MPS Live Linux (Terminal)".

4.1.2 Network configuration

Configuration via graphical user interface

To make the configuration via graphical user interface, log in as user: "meinberg" with the password: "live", after a successful boot procedure. Your screen should show the following picture:



After logging-in, click on the marked symbol on the right side at the lower edge of the screen and after that on "Network Settings". In this field you can make settings for the network adapter.

In the window "Networking" click on "Add Profile" to create a new profile for one of the network adapters. It appears a new window called "New Profile". Select the tab "Identity", enter a name for this profile and select the network adapter (MAC address) for which the profile has to be created. This done, click on the tab "IPv4" and configure the IP settings as you desire. Confirm your entry with "Add". To configure more IP addresses, repeat the procedure. To finalize the network configuration you have to restart the system.

	1	New Profile		×		New	Profile	×
Security Identity	Name	eth0			Security Identity	IPv4		
IPv4 IPv6	MAC Address	00:48:54:53:73:F9 (eth0)	-		IPv4 IPv6	Addresses	Manual	-
	Cloned Address					Address 192.168.100.	10	
	MTU	automatic	- +			Netmask 255.255.255.	0	
	Firewall Zone	Default	~			Gateway 192.168.100.	254	
								+
						DNS	Automatic 💽	
	Connect aut	omatically				Server		
	🔳 Make availa	ble to other users						+
		Ca	Add				Cancel	Add

Configuration via terminal

To make the configuration via terminal, select "MPS Live Linux (Terminal)" in the boot menu.

You will automatically log in as user: "meinberg". For an overview of all installed network adapters, type in the command "ifconfig". Write down the MAC address (HWaddr) of the adapter, for which you would like to configure an IP address.



Type in the command: "nmcli connection add type ethernet ifname [name of the network adapter]" to create a profile.

meinberg@mps-live ~ \$ nmcli connection add type ethernet ifname eth0 Connection 'ethernet-eth0' (4e10e70e-b975-47ea-a148-3ae46931756b) successfully added. meinberg@mps-live ~ ■

With the command "nmcli connection edit ethernet-*[name of the network adapter]*" you will enter the configuration menu of the new profile.



Now, type in "set ethernet.mac-address" and confirm with the enter key. Type in the MAC address you wrote down before and confirm with the enter key. By using the command: "set connection.interface-name [name of the network adapter]" you assign the profile to the appropriate adapter.



Using the command: "set ipv4.method manual" or "set ipv4 method auto" you can select between a static and a dynamic IP address. If you want to configure a static IP-address use the command: set ipv4.addresses [IP-address/netmask].

nmcli> set ipv4.method manual nmcli> set ipv4.addresses 192.168.100.10/24 nmcli>

With the commands "save" and "activate" you can save and activate the settings you have made. Exit the configurator with the command: "quit". To configure more IP-addresses, repeat the procedure. To complete the initial setup, restart the simulation service with the command: "mps restart".

```
nmmuly sove
Connection 'ethernet-eth0' (4e10e70e-b975-47ea-a148-3ae46931756b) successfully updated.
nmcli> activate
Monitoring connection activation (press any key to continue)
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/7
```

4.2 Installation on an independent system

In addition to the possibility of using the simulation service via live Linux, you can install it on any self-sufficient 64-bit Linux system. You will find the installation file on the partition "mps-setup" on the USB stick with the imprint "Meinberg". Alternatively, you can download it, according to your distribution (Debian, Ubuntu, Mint / CentOS, SuSE) at:

https://www.meinbergglobal.com/download/software/mpsv2/mpsv2_linux.zip

Now, extract the zip archive and start the installation script "install" via the command line. After the installation you can start the simulation using the command: "(sudo) mps start" in the remote control mode or directly via the command line. Please note, that the execution of the simulation service requires root privileges. More information about the control types can be found in the following chapter.

5 Control

5.1 Control via Remote Control Interface

5.1.1 Connection on the same computer

In order to configure and control the simulation on the same computer, start the live Linux system with the graphical user interface and log in as user: "meinberg" with the password: "live". Now, start the Remote Control Interface by double clicking on the desktop icon "MPS Remote Control". Double click on the panel "Localhost" and login as user: "root" without the need of a password.

ШМ	IPS Remote Control						
7	MEINBER	Б ргото	COL SIMULATO	₹_M/			
Ma	ain Overview						
	Localhost Daemon (Control:	Manual Remote C	onnection:			a
			IP Address:		2		-95
	PID: -	(Connect to: Localhost		 	1	
	Loc Status: Version: License: CPU: Simulated Units: Runtime:	alhost Online 2.0.1 RC-benz Unliméd 24 Cores, 0% used 0 0, 19h, 00m, 32s	Anonymous Login Dest. Port (def. 63624): Type: Name: Password:	63624 Public root Cancel	• •		
Sc	anning network						

5.1.2 Connection from a remote computer

Alternatively, you can also configure and control the simulation from a remote Windows or Linux system.

Installation on a Windows system

Download the Remote Control Interface installation program from Meinberg's website at:

https://www.meinbergglobal.com/download/software/mpsv2/mpsrc_win_setup.exe

Alternatively, you can also find the program on the partition "mps-setup" on the USB stick with the imprint "Meinberg".

Attention: Do not remove the USB stick while the "Live-System" is still running.

After a successful installation adjust your firewall settings, so that TCP-Port 63625 and UDP-Port 65353 are unlocked. The ports to be used for this purpose can be changed afterwards.

Installation on a Linux system

Download the installation program MPSv2 from Meinberg's website at:

https://www.meinberg.de/download/software/mpsv2/mpsv2_linux.zip

Alternatively, you can also find the program on the partition "mps-setup" on the USB stick with the imprint "Meinberg".

Attention: Do not remove the USB stick while the "Live-System" is still running. Now, extract the zip archive and start the installation script "install" via the command line.

Connection after successful installation

After the successful installation, you can start the Remote Control Interface by using the Linux command: "mpsrc" or for Windows by double-clicking on the desktop icon "MPS Remote Control". Now, double click on the panel with the name of the simulation computer and login as user: "root" without the need of a password.

MPS Remote Control	Trigondan Adresse Serunter	- 8 %
MEINBERG PI	ROTOCOL SIMULATOR	
Main Overview		
Localhost Daemon Control:	Manual Remote Connection:	ŵ
	IP Address:	
PID: -	Connect to: 172.16.100.81	
	Dest, Port (def : 63624): 63624	
simulator-server	Type:	
	Name:	
	Password:	
Status: Online	Cancel	
Version: 2.0.1 RC-be		
License: Unlimited		
CPU: 24 Cores, 05	6 used	
Simulated Units: 92		
Runtime: 0d, 19h, 50n	1, 05s	
Scanning network		

5.2 Control via the command line

To start the simulation service via the command line with the following parameters, it must, if it is running in the remote control mode, first be terminated with the command: "(sudo) mps stop".

5.2.1 Required parameters

> -m,	-mode	Simulation mode ("NTP"/"PTP")
> -c,	-count	Number of units to be simulated
> -i,	-interface	Network adapter (e.g. "eth0")

5.2.2 Optional Parameters

> -hw,	-hwAddr	MAC address of the first unit to be simulated [default: EC:46:70:FF:00:00]
> -p,	-protocol	Network protocol ("L2"/"IP4"/"IP6") [default: "IP4"]
> -iр,	–ipAddr	IP address of the first unit to be simulated [default: 172.26.1.1/2000::1]

NTP configuration options:

> -ra,	-refAddr	NTP server address
> -pt,	–pollType	NTP polling mode (0 = user-defined, 1 = fast sync, 2 = standard) [default: 2]
> -di,	-defPollIntv	Standard polling interval [default: 4 (2 EXP 4 = 16 seconds
> -ci,	-custPollIntv	User-defined polling interval (ms) [default: 500]

PTP configuration options:

> -tt,	–transmType	Transmission mechanism ($0 = Unicast$, $1 = Multicast$) [default: 1]
> -ck,	-clockType	Device type (0 = Master, 1 = Slave, 2 = Controller(uc)/Auto(mc)) [default: 1]
> -dm,	-delayMech	Delay mechanism ($0 = \text{Peer}2\text{Peer}, 1 = \text{End}2\text{End}$) [default: 1]
> -dn,	-domainNum	Domain number [default: 0]
> -ai,	–annIntv	Announce interval (2(x Sec., -77) [default: 0]
> -si,	–syncIntv	Sync interval (2(x Sec., -77) [default: 0]
> -ri,	–reqIntv	Request interval (2(x Sec., -77) [default: 0]
> -hm,	–hybridMode	Hybrid mode (0/1) [default: 0]
> -pm,	–priMasAddr	Primary unicast master or controller address
		[default: EC:46:70:FF:F0:00/172.26.0.1/2000::1]
> -am,	-altMasAddr	Alternative unicast master or controller address

5.2.3 Options

> - d ,	-daemon	Start the simulation in the Remote Control mode
> -n,	-netInfo	Display information about the network adapter and terminate the service
> -l,	-license	Show license information and terminate the service
> - s ,	–stats	Display statistics every second
> -f,	–statsFile	Write statistics into a file every 30 seconds
> -h,	-help	A list of all possible configuration parameters

Parameter list

For a complete list of all possible configuration options enter the command: "mpsd -h" or "mpsd -help". Please note that a simulation can only be started either in the remote control mode or via the command line, but not in parallel.

6 Remote Control Interface

6.1 Main Tab

The main tab consists of four functional areas.



The individual areas will be described in the following sections.

6.1.1 Localhost Daemon Control

If the Remote Control Interface was started on a Linux system, the simulation service can be started, stopped and monitored in this area. This function is only available, when using Linux, since it is not available on Windows systems.



With the "Play" button, the service can be started and stopped with the "Stop" button. In the "PID" area, both, the current status and process-ID are displayed, as long as the service is running.

6.1.2 Manual Remote Connection

If the service does not automatically appear in the overview (4), i.e. due to blocked UDP-Ports, the connection to a simulation service can also be done manually. To do so, enter the IP address of the simulation computer in this area and click on the button which is used to establish the connection. Now, the window for the connection (user selection, password entry) should appear. More information can be found in the description of overview (4).

6.1.3 Remote Control Settings

To open a new window with the title "Preferences" click on the gearwheel icon. In this window you can make general settings for the Remote Control Interface.

OL SIMULATOR		
Preferences	X	
Save & Restore open connection	s	
UDP Listening Port (def.: 65353): TCP Source Port (def.: 63625):	65353 63625	
Default Configuration Location: Default Statistics Location:	C:\Users\thorn\Documents/	
	Cancel OK	

Configuration Options:

Save & Restore open connections

If this function is activated, all open connections will be saved when the Remote Control Interface is terminated and automatically restored at the next start.

UDP Listening Port

The simulation service sends (if enabled) UDP broadcast packets with general information about the service to the network. In this field the corresponding source port can be configured. By default, port 65353 is used. Attention: Once the setting has been changed, only the services which use the same destination port will be detected automatically! Therefore, remember to also change the settings for the service. The required steps are explained in chapter "Connection Tab".

TCP Source Port

A connection to a simulation service is set up with the help of the transmission protocol "TCP". The source port which should be used can be set under "TCP Source Port". As default, port 63625 is used.

Default Configuration Location

The default target path for group configurations can be selected under "Default Configuration Location".

Default Statistics Location

The target path for saved statistical files can be selected under "Default Statistics Location".

6.1.4 Overview of detected simulation services

Automatically detected or manually registered services are displayed in the service overview (4).



The following options are available to connect to one of the services:

- Double click the Meinberg Star Icon
- Left click on the blue arrow icon of the service \rightarrow Connect
- Right click on the panel of the service \rightarrow Connect

To establish a connection, a connection window will appear, in which you can make the following settings:

Setting options:

Anonymous Login

An anonymous login can only be made without user name and password. This function is only possible if it is activated in the simulation service.

Dest. Port

"Dest. Port" stands for the destination-port of the TCP connection and can only be configured, if the service was added manually. For an automatically detected service the field is already filled in.

Type

In the field "Type" you can select the user type. "Public" users are introduced by previously mentioned UDP packets, whereas "Private" (secret) users remain unknown and have to be entered manually by the respective user. The type is determined once at each user creation.

Name

Depending on the previously selected user type you can either choose a public user or enter your private user name.

Password

In this field type in your personal user password.

С	onnect to: 172.16.100.81	×
	Anonymous Login	
	Dest. Port (def.: 63624):	63624
	Туре:	Public 👻
	Name:	
	Password:	
		Cancel OK

Confirm your entry with "OK".

Please Note:

Upon delivery, only the user "root" without password exists. After the first login with the user name "root", you can change the user database as desired.

6.2 Connection Tab

After having successfully established a connection with a simulation service, the connection tab will open up.

Image: Solution (ARP/NDP): PTP: PTP: PTP: PTP Incast: O (0 00/sec) Transmission Grants received: 0 Requests received: 0 0.00%) Produced stand set: 0 0.00%) Transmission Grants set: 0 Transmission Grants set:	Main	172.16.100.81	Overview					
Status ID Owner Itade Units Interface Network First Address Protocol Parameters Runtime Image: Statustics Summarized Statistics PTP: PTP: Requests sent: 0 (0 00/sec) Protocol Parameters Runtime MAC Resolution (ARP/NDP): PTP: PTP: PTP PTP Unicast: Transmission Requests sent: 0 (0 00/sec) Transmission Denias received: 0 PTP Unicast: Transmission Cancels sent: 0 PTP Unicast: PTP	4				A 1		User: root 🚳	
Status 10 Owner Mode Units Interface Herdace First Address Protocol Parameters Runtime Image: Status Image: Status Image: Status Summarized Statistics MAC Resolution (ARP/NDP): PTP: O Announces sent: 0 (0.00/sec) Transmission Requests sent: 0 Requests tend out: 0 NIDelay Requests sent: 0 0.000/sec) Transmission Requests sent: 0 Transmission Carats received: 0 Transmission Carats sent: 0 Transmission Carats received: 0 Transmission Carats sent: 0 Transmission Carats sent: <t< th=""><th>يل</th><th></th><th></th><th></th><th></th><th></th><th>יערי</th><th></th></t<>	يل						יערי	
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In area 1, the main menu to configure, control and monitor the simulation service, is displayed.

1	÷	Create a new simulation group
2	<u>()</u>	Edit an available group
3	×	Delete the selected group(s)
4	×	Deletion of all available groups
5		Opening of a group configuration file
6		Saving the current group configuration
7		Starting all Groups
8		Stopping all Groups
9		Starting the selected Group(s)
10		Stopping the selected Group(s)
11	R	Status details of the selected Group(s)
12		Statistics / Figures of the selected Group(s)
13		Resetting all Group Statistics
14		Resetting Statistics of the selected Group(s)
15		Default settings of the simulation service
16		Disconnect

The following chart shows the individual symbols and their fundamental functions.

6.2.1 Symbol 'Add' - Create a new simulation group

By clicking on the symbol "Add", a window to perform group configurations opens up. This window is divided into a main tab (Main), a special tab (Special) and other protocol specific tabs (NTP, PTP...).

Main Tab (Main)

Main	Special	NTP
Simulation Mo	de:	NTP 🔹
Group Name:		Unit Group 24
Simulated Uni	ts:	10
Network Interfa	ace:	eth0 💌
MAC Cache:		Per Unit 👻
MAC Cache Ti	meout:	60 sec
Network Proto	col:	IPv4 -
First MAC Addr	ress:	EC:46:70:FF:00:5C
Last MAC Addr	ress:	EC:46:70:FF:00:65
First IP Addres	IS:	172.83.23.5
Last IP Addres	S:	172.83.23.14
Subnet Mask:		16 bits
Network IP Add	dress:	172.83.0.0
Broadcast IP A	ddress:	172.83.255.255
🔲 Gateway		
Gateway IP Ad	dress:	172.83.255.254
DSCP:		Default PHB (0x00)
TTL / Hop Lim	it:	64
Request Time	out	1000 ms
		Cancel OK

Simulation Mode

Simulation mode (NTP or PTP). Depending on the selected mode, additional protocol specific tabs will be faded in or hidden.

Group Name Name of the group.

Simulated Units

Number of units to be simulated (i.e. NTP Clients or PTP Slaves). For each additional simulated unit the configured MAC and IP address will be incremented.

Network Interface

The network adapter which shall be used.

MAC Cache

Type of the simulated MAC address storage. Depending on the selection, a separate MAC cache per simulated unit (Per Unit) or total cache per group (Per Group) will be created.

MAC Cache Timeout

The validity period of an entry in the MAC cache, in seconds.

Network Protocol

The network protocol which shall be used (IPv4, IPv6, IEEE 802.3). Depending on the selected protocol a MAC and / or IP address must be configured subsequently.

First MAC Address

MAC-address of the first simulation unit. The calculated MAC address of the last unit will be displayed in the field "Last MAC Address".

First IP Address

IP address of the first simulation unit. The calculated IP address of the last unit will be displayed in the field "Last IP Address". Depending on the selected network protocol, an IPv4 or Ipv6 address must be configured.

Subnet Mask / Network Prefix

Number of netmask bits. Depending on the configuration, a corresponding network address will be displayed in the field "Network IP Address".

Gateway

Activation of the gateway configuration. At activated gateway, the corresponding address of the gateway to be used, can be configured in the next field "Gateway IP Address".

<u>DSCP</u>

Differentiated Service Code Point (Per Hop Behavior), which can be used for prioritization of IP packets in switches.

TTL/Hop Limit

TTL (Time to live) determines the number of possible hops between start- and end nodes of network packets.

Request Timeout

Standard validity period of a request in milliseconds (i.e. NTP Request), before it is marked as unanswered.

Special Tab (Special)

In the tab "Special", special features such as VLAN, failure simulation or Date-/Time- simulation can be switched on or off and configured. If the features are switched off, the corresponding configuration fields will be deactivated.

Main	Special	PTF					
VLAN Taggi	na						B
Priority (PCP):			1: Best Effo	ort		•	-12*
Drop Eligible:			0			•	
ID:			0				
Ignore Unta	gged Packets						
✓ Failure Sim	ulation						
Time Betweer	n Failures (TBF):		300	to	360		sec
Time To Reco	ver (TTR):		30	to	35		sec
☑ Date/Time :	Simulation						
Simulated Da	te:		31.01.2016			* *	
Simulated Tin	ne:		23	:	50		
Leap Second:			None			•	
					ancel		OK
							0.1

VLAN Tagging

Priority (PCP) Prioritization of VLAN packets.

Drop Eligible Setting the Drop Eligible Bits (dropping of packets in case of congestion).

 $\frac{\text{ID}}{\text{ID}}$ of the VLAN tag (0-4095)

Ignore Untagged Packets Prevent the reception of untagged packets.

Failure Simulation

Time Between Failures (TBF): Period of time between two simulated failures of a unit in seconds.

Time To Recover (TTR) Period of time between the beginning of a simulated failure and the recovery of a unit in seconds.

Date/Time Simulation

<u>Simulated Date</u> Date of the simulated group.

<u>Simulated Time</u> Time of the simulated group.

Leap Second

Indication, whether for the next possible leap second insertion point, a positive or negative leap second shall be inserted.

NTP Tab (NTP)

Depending on the selected simulation mode, you can make specific settings for NTP clients or server in this tab.

Iviain Special	NTP	
Stratum:	1]
Precision:	0.000001s (-20) -]
Root Delay:	1000	us
Root Dispersion:	10000	us
	Reference Clock -)
Reference ID:	Custom -)
	MPS	
Source Port:	Standard (123) -]
Client Simulation		
Server IP Address:	172.83.23.23	
Polling Interval:	Custom]
Custom Interval:	100	ms
		, ,
	Cancel	ОК

Stratum

The stratum value (NTP server level) of a simulated NTP server.

Precision

The time precision which the server announces to the outside.

Root Delay

Estimated round trip delay to the primary reference clock.

Root Dispersion

Greatest possible time error in relation to the primary reference clock.

Reference ID

ID of the current reference, in form of a reference clock type, an IPv4 address, a MD5 Hash (IPv6) or an unsynchronized condition.

Source Port

Source port of outgoing NTP packets, which is to be used.

Client Simulation

Switching the NTP client simulation on or off. Depending on the condition, the following entry fields are activated or deactivated. Independent from the client simulation, the server function is basically always activated.

Server IP Address

IP address of the NTP server, which shall be tested.

Polling Interval

NTP polling mode (user-defined, fast sync, standard). Depending on the selected mode, different entry fields are faded in or hidden.

Client Simulation		Client Simulation		
Server IP Address:	172.26.0.1	Server IP Address:	172.26.0.1]
Polling Interval:	Custom	Polling Interval:	Fast Sync 🗸	•
Custom Interval:	1000 ms	Fast Sync Interval:	100	ms
Client Simulation		Fast Sync Duration:	50	sec
Server IP Address:	172.26.0.1	Fast Sync Target Percentage:	90	%
Polling Interval:	4 (16s)	Fast Sync Default Interval:	15	sec

In the user-defined mode, the length of the polling interval (user-defined interval) must be specified in milliseconds. Next to the "Fast Sync Interval" in milliseconds the duration (Fast Sync Duration) in seconds, the target percentage of answered requests, as well as the standard interval (Fast Sync Default Interval) after the end of the duration and fulfillment of the target percentage are needed in seconds, in the "Fast Sync" mode.

PTP Tab (PTP)

Depending on the selected simulation mode, you can make specific settings for PTP in this tab.

Transmission Type

Transmission type of PTP packets (Unicast or Multicast). Depending on the selected "Transmission Type" different control panels are faded in or hidden.

Main Special PTP			Main S	pecial PTP			1
Transmission Type:	Unicast		Transmission Typ	be:	Multicast		•
Clock Type:	Slave		Clock Type:		Slave		•
Profile:	Custom		Profile:		Custom		•
Timestamping Mechanism:	One-Step •		Timestamping Me	echanism:	One-Step		•
Domain Number:	0		Domain Number:		0		
Announce Interval:	0 (1/s)		Announce Receip	ot Timeout:	3		Intervals
Sync Interval:	0 (1/s)		(P)Delay Request	t Interval:	0 (1/s)		•
(P)Delay Request Interval:	0 (1/s)		Delay Mechanism	1:	E2E		•
Transmission Duration:	60	sec	V Hybrid Mode				
🔲 Unicast Load Balancing			UTC Offset		36		sec
Group IDs:	0,1,255						
Recommendation Validity:	5	Intervals					
Avoid Master Hopping							
Primary Master Address	172.26.0.1						
🕅 Alternate Master							
Alternate Master Address	172.26.0.2						
UTC Offset:	36	sec					
	Cancel	OK				Cancel	OK

Clock Type

Clock type of the simulated unit(s). For the transmission via unicast, you can select from the clock types "Slave", "Master" and "Controller" (Unicast Load Balancer). In the Multicast mode you can as well choose between "Slave" and "Master". Additionally, the type "Auto" is available, which automatically decides between "Slave" and "Master" (Best Master Clock Algorithm). Also at the selection of the clock type, different control panels are faded in or hidden, and possible additionally required configuration tabs are displayed.

<u>Profile</u>

Configuration set, or PTP profile. Depending on the selected transmission type you can choose between "Telecom G.8265.1" and "SMPTE" (Unicast) or "Power C37.228", "Telecom G.8275.1" and "SMPTE" (Multicast). When you select a profile, appropriate standard defined parameters are preset and possible additionally required control panels faded in. Profile specific parameters will be explained in detail, at the end of this chapter.

Timestamping Mechanism

Timestamping mechanism. The possibility to choose between "One-Step" and "Two-Step". Follow-Up packets are only generated in the "Two-Step" procedure.

Domain Number

PTP domain number. By using the domain number, you can separate the PTP traffic onto different domains.

Announce Receipt Timeout (Multicast)

Number of "announce" intervals, which a simulated device is waiting for, before it marks a detected "Master" as passive and reacts in the appropriate way depending on the set clock type.

Announce Interval (Multicast Master, Auto / Unicast Slave, Controller)

Interval that sends out "announce" packets. In the "Unicast" mode this parameter is configured on the "Slave's" side and is requested from the corresponding "Master" by the "Slave". In the "Multicast" mode, the "Announce Interval" is configured directly at the "Master".

Sync Interval (Multicast Master, Auto / Unicast Slave)

Interval that sends out "Sync" (and "Follow-up") packets. In the "Unicast" mode this parameter is configured on the "Slave's" side and is requested from the corresponding "Master" by the "Slave". In the "Multicast" mode, the "Sync Interval" is configured directly at the "Master".

(P)Delay Request Interval (Multicast / Unicast Slave)

Interval that sends out "(Peer) Delay Requests" packets. In the "Unicast" mode this parameter is configured on the "Slave's" side and is requested from the corresponding "Master" by the "Slave". In the "Multicast" mode, the interval is configured for all clock types, for the "Master" it means the maximum possible request rate and for the "Slave" it means the actually used rate.

Delay Mechanism (Multicast)

The mechanism which is to be used for the calculation of the delay. In "E2E" (End to End) mode, "Delay Requests" and "Delay Response" packets are send, in "P2P" (Peer to Peer) mode, "Peer Delay Requests" and "Peer Delay Response" packets.

Hybrid Mode (Multicast)

If "Hybrid Mode" is activated, "Delay Request" packets are directly send to the Master via Unicast, to avoid unnecessary multicast traffic.

Max. Requests (Unicast Master)

Maximum number of incoming "Delay Request" packets per second, which a simulated Unicast Master is able to handle. This parameter is only necessary, if PTP Unicast "Load Balancing" (ULB) is used.

Transmission Duration (Unicast Slave, Controller)

Validity of a Unicast packet subscription (Announce/Sync/Delay Request) in seconds.

Unicast Load Balancing (Unicast Slave)

If ULB is activated, the entry fields "Group IDs", "Recommendation Validity" and "Avoid Master Hopping" are enabled and instead of "Primary Master Address", "Alternate Master" and "Alternate Master Address"; "Primary Controller Address", "Alternate Controller" and "Alternate Controller Address" are displayed. Furthermore, functionalities for the communication with unicast controllers are enabled by specific ULB TLVs.

Group IDs (Unicast Slave)

Accepted "Group IDs" of proposed Unicast Masters, at the use of ULB. 255 is to be used as "Wildcard Group ID".

Recommendation Validity (Unicast Slave)

Number of subscription intervals, for which a proposed Master is used. After expiry, a new request is send to the controller.

Avoid Master Hopping (Unicast Slave)

If activated, it prevents the simulated Slave to switch between two Masters, which are both being proposed due to their identical quality characteristics.

Primary Master Address (Unicast Slave)

IP Address of the Unicast Master, which is to be used first.

Primary Controller Address (Unicast Slave - ULB)

IP Address of the Unicast Controller, which is to be used first.

Alternate Master (Unicast Slave)

Configuration activation of an alternate Unicast Master, which is only to be used, if the primary Master is not accessible.

Alternate Controller (Unicast Slave - ULB)

Configuration activation of an alternate Unicast Controller, which is only to be used, if the primary Controller is not accessible.

Alternate Master Address (Unicast Slave) IP Address of the Unicast Master, which is to be used alternatively.

Alternate Controller Address (Unicast Slave - ULB) IP Address of the Unicast Controller, which is to be used alternatively.

UTC Offset

Current difference of the TAI time scale to UTC, due to leap seconds. At the evaluation of PTP packets, the "UTC Offset" is used to calculate the "Delay" and the "Offset".

Profile Version (C37.238 Profile)

The power profile version, which is to be used. Depending on the selected version, different and additional configuration possibilities are displayed in the tab C37.238.

Destination MAC Address (G.8275.1 Profile) The target MAC Address of PTP packets in the G.8275.1 Profile.

PTP Unicast Load Balancing Reiter (PTP ULB)

In this tab, you can make specific configurations for the PTP Unicast Controller.

Main Special PTP P Max. Recommendations: 5 Max. Utilization: 90 Controlled Masters: 1 First Controlled Master Address: 172.26.0.6 Group ID: 0 OK Cancel	TP ULB	<u>Max. Recommendations</u> Maximum number of recommended Masters, in an an- swer to a Slave request. <u>Max. Utilization</u> Maximum utilization of the controlled Masters. After exceeding this limit value, a Master is no more recom- mended.
1722601,0 1722602,0 1722603,0 Controlled Masters: First Controlled Master Address: Group ID: OK Cancel	1 172.26.0.6 0	
172.26.0.1, 0 172.26.0.2, 0 172.26.0.3, 0 172.26.0.4, 0 172.26.0.5, 0		 Hinzufügen von Master(n) Master in der Liste nach oben versetzen Master in der Liste nach unten versetzen Master editieren Löschen der/des selektierten Master(s) Löschen aller Master

PTP Quality Tab (PTP Master)

In this tab you can configure the quality parameter of simulated PTP Masters, which, among others, are crucial for the result of the "Best Master Clock Algorithm" (BMCA).

Main	Special	PTP	PTP Quality	
Priority 1:		128		
Clock Class:		248		
Clock Accurac	y:	0x2B (<= 10ms)	•
Clock Variance	e:	65535	i	
Priority 2:		128		
Steps Remov	ed:	0		
GM Clock ID:		EC:46	:70:FF:FE:FF:00:00	
Time Source:		0x60 (Hand-Set)	•
Time Scale:		PTP		•
🔲 Time Trace	able			
Frequency 1	Fraceable			
			Cancel	ОК

Priority 1

Priority 1. First priority parameter in the BMCA. Value range: 0-255

<u>Clock Class</u>

Traceability of the time and frequency precision. Second quality parameter in the BMCA. Value range: 0-255.

<u>Clock Accuracy</u> <u>Clock accuracy</u>. Third quality parameter in the BMCA.

Clock Variance

Maximum possible clock variance. Calculated with the "Allan Deviation". Fourth quality parameter in the BMCA. Value range: 0-65535.

Priority 2 Priority2. Fifth quality parameter in the BMCA. Value range: 0-255.

Steps Removed Number of "Boundary Clocks" between the Master and the Grandmaster.

<u>GM Clock ID</u> PTP Clock ID of the Grandmaster.

Time Source

Time Source, i.e. "GPS". When selecting the time source "Custom", an additional entry field for a user-defined hexadecimal value fades in ("Custom Time Source").

Time Scale

Used time scale. You can choose between the standard PTP time scale and any other scale.

<u>Time Traceable</u> Shows, if the current frequency can be traced back to a reference clock.

Frequency Traceable

Zeigt an, ob die aktuelle Frequenz auf eine Referenzuhr zurückzuführen ist.

PTP SMPTE Tab (PTP SMPTE Master)

In this tab you can make specific settings for the Master operation in the SMPTE profile. The corresponding values will be taken over into the "Synchronization Metadata TLV".

Main	Special	PTP		PTP Quality	PTP S	MPTE
System Frame	Rate:		29.97 Hz		•	
Master Locking	g Status:		1: Free Ru	in	•	
			Drop Fra	ame		
Time Address	Flags:		Color Fr	ame Indication		
Current Local	Offset:		+ •	3636		sec
Daily Jam Tim	e:		18			x 10 min
			Current			
Daylight Savin	g:		🔲 Next Dis	continuity		
			Previou:	Daily Jam Time		
				Cancel		ОК

System Frame Rate

Standard frame rate of the simulated device. When choosing the framerate "Custom", an additional entry field for a user-defined rate in Hz fades in.

Master Locking Status

Additional information about the clock class, which shows the current synchronization status.

Time Address Flags

Divided in "Drop Frame" and "Color Frame Indication".

Current Local Offset

Current Offset of the system time to the local time in seconds.

Daily Jam Time

Point in local time (in ten-minute intervals) since midnight, for jamming ST 12-1 time address to local time.

Dailight Saving

Divided in "Current", "Next Discontinuity" and "Previous Daily Jam Time". Shows if at these times it is either summer- or wintertime.

PTP C37.238 Tab (PTP C37.238 Master)

In this tab you can make specific settings for the Master operation in Profile C37.238. The corresponding values are taken over into the "C.37.238 TLV". Depending on the selected profile version ("Profile Version"), different configuration possibilities are offered.

		C37.2	38-2011			
Main	Special	PTP	PTP C	Quality	PTP C37.2	38
Grandma	aster ID:	3				
Network	Time Inaccuracy:	0			ns	
Alternate	Time Offset:	+	▼ 3600		sec	
Alternate	Time Scale Nam	e: Cl	ET			
			37.238	revis	sion	
	Main	Special	PTP	PT	P Quality	PTP C37.238
	Grandmaster	ID:	3			
	Network Time	Inaccuracy:	0			ns
	STD UTC Offs	et:	+	▼ 360	0	sec
	STD Time Zor	ne Name:	CET			
	Includes D	ЗT				
			1		 hour of data 	y (UTC)
	STD Time Adj	ustment:	0		 day of wee 	ek (0 = Sunday)
			4		• week of m	ionth (4 = last week)
			9		▼ month (0	= January)
	DST UTC Offs	et:	+	▼ 720	0	sec
			1		 hour of da 	y (UTC)
	DS Time Adju	stment:	0		 day of wee 	ek (0 = Sunday)
			4		• week of m	ionth (4 = last week)
	D0 Time 744		2	T	• month (0	= January)
	DS Time Zoni	e Name:	CES	1		
					Cancel	ОК

DST UTC Offset (C37.238-revision) Offset to UTC, at activated "Daylight Saving Time" in seconds.

DS Time Adjustment (C37.238-revision)

The time, when it is switched from standard time to "Daylight Saving Time". Is divided in "hour of day", "day of week", "week of month" and "month".

DS Time Zone Name (C37.238-revision) Name of the time zone at activated "Daylight Saving Time".

<u>Grandmaster ID</u> ID of the simulated "Power Profile Grandmaster". Value range: 0–255.

Network Time Inaccuracy Know inaccuracy of the network time in nanoseconds.

Alternate Time Offset (C37.238-2011) Offset of an individual time scale to UTC in seconds.

Alternate Time Scale Name (C37.238-2011) Name of the individual time scale.

STD UTC Offset (C37.238-revision) Standard offset to UTC, at activated "Daylight Saving Time" in seconds.

STD Time Zone Name (C37.238-revision)

Name of the time zone, at inactivated "Daylight Saving Time".

Includes DST (C37.238-revision)

Shows if a time zone should be configured for the "Daylight Saving Time" or not.

STD Time Adjustment (C37.238-revision)

The time, when it is switched from "Daylight Saving Time" to standard time. Is divided in "hour of day", "day of week", "week of month" and "month".

6.2.2 Symbol 'Edit' - Edit an available group

When you click on the symbol "Edit", the window for group configuration, which was explained in detail in the previous chapter, opens up. In this window, all previously made configurations can be changed at any time later.

6.2.3 Symbol 'Delete' - Delete the selected group(s)

When you click on the symbol "Delete", the selected group or groups will be deleted. Ongoing groups will automatically be stopped before deletion. Please note, that deleted groups cannot be restored.

6.2.4 Symbol 'Delete All' - Deletion of all available groups

When you click on the symbol "Delete All", all configured groups will be deleted. Ongoing groups will automatically be stopped before deletion. Please note, that deleted groups cannot be restored.

6.2.5 Symbol 'Open' - Opening of a group configuration file

When you click on the symbol "Open", a new window opens up to select a saved group configuration (*.mps). After your selection and a subsequent click on "Open" the current group configuration is deleted and the saved configuration is uploaded.

Open saved unit group config	uration	
COO - 🕌 « Eigene Dokur	nente 🕨 Meinberg 🕨 mpsrc 🕨 Savefiles	 Savefiles durchsuchen
Organisieren 🔻 Neuer Ord	Iner	iii 🕶 🗖 🔞
 ★ Favoriten ➡ Bibliotheken ➡ Bilder ➡ Dokumente ➡ Musik ➡ Videos ♥ Computer ♥ Netzwerk 	Name	Wahlen Sie eine Datei für die Vorschau aus.
Datei <u>n</u> am	< m >	MPS configuration file (".mps;" Offnen Abbrechen

6.2.6 Symbol 'Save' - Saving the current group configuration

When you click on "Save", a window opens up to save the current group configuration. After you enter the file name and click on the button "Save", the current configuration is saved.

6.2.7 Symbol 'Run All' - Starting all Groups

When you click on the symbol "Run All", all listed simulation groups are started.

6.2.8 Symbol 'Stop All' - Stopping all Groups

When you click on the symbol "Stop All", all listed simulation groups are stopped.

6.2.9 Symbol 'Run' - Starting the selected Group(s)

When you click on the symbol "Run", all the selected simulation groups are started.

6.2.10 Symbol 'Stop' - Stopping the selected Group(s)

When you click on the symbol "Stop", all the selected simulation groups are stopped.

6.2.11 Symbol 'Status Details' - Status details of the selected Group(s)

When you click on the symbol "Status Details", a new window opens up, which displays details about the current simulation status. Depending on the simulation type (NTP, PTP Master / Slave, PTP Controller), the displayed information differs from one another. Using the navigation buttons (arrow left, arrow right) you can select the device, for which the details should be displayed.

	etails 📃 🗙	Unit Group 2 St	atus Details				
Device Inform	nation:	Overview:			Master Info	rmation:	
(172.16.38.200	•	Initializing: Faulty: Disablect	0		Address: Clock ID: Priority 1:	172.27.38.201 EC:46:70:FF:FE 128	E:FF:10:01
Polling Type: Polling Interval:	Custom 1000ms	Listening: Pre-Master:	0		Clock Class: Clock Accuracy	248 0x2B	
Reference Inform	mation:	Master: Passive:	0		Clock Variance: Priority 2:	65535 128	
Address: Source Port:	172.27.38.200 123	Uncalibrated: Slave:	10		GM Clock ID:	EC:46:70:FF:FE	E:FF:00:00
Leap: Version:	- NTPv4	Device Inform	mation:		Announce Intv.: Sync Intv.: Bequest Intv.	1s (25.9 sec) 1s (43.8 sec) 1s (41.8 sec)	
Stratum: Precision:	12 1us	3 172.16.38	.210	÷ 💿	inclusion mile.	(41.0 200)	
Root Delay: Root Dispersion:	1007us 9994us	Port State:	Slave				
	Close						
Jnit Group 3 Statu	s Details	P.	TP Controlle	,			
Unit Group 3 Statu Overview:	s Details	Controlled Master	ΓΡ Controlle Details:	7		_	
Jnit Group 3 Statu Overview: Initializing: Faulty:	s Details	P Controlled Master Available Masters: 5	TP Controller Details:	r		_	
Jnit Group 3 Statu Overview: Initializing: Faulty: Disabled:	s Details	P Controlled Master Available Master: 5 # Address	TP Controller Details:	Quality		Utilization	Recomm.
Jnit Group 3 Statu Overview: Intializing: Faulty: Disabled: Listening:	s Details	P Controlled Master Available Masters: 5 Ø Address 1 172.27.38.302	TP Controller Details: Ann. Intv. 1s (15.9 sec)	Quality 128, 248, 0x28, 6	55535, 128, 0 (Utilization %, 1/10000 msg/sec	Recomm.
Jnit Group 3 Statu Overview: Initializing: Faulty: Disabled: Litening: Pre-Master:	s Details	P Controlled Master Available Masters: 5 # Address 1 172.27.38.202 2 172.27.38.203	TP Controller Details: Ann. Intv. 1s (55.6 sec)	Qually 128, 248, 0x28, 6 128, 248, 0x28, 6	35035, 128, 0 (55535, 128, 0 (Utilization 9%, 110000 mg/sec 9%, 110000 mg/sec	Recomm. 0 0
Jnit Group 3 Statu Overview: Initializing: Faulty: Disabled: Listening: Pre-Master: Master:	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	P Controlled Master Available Masters: 5 # Address 1 172,27,38,202 2 172,27,38,203 3 172,27,38,204	Image: Controller Details: Ann. Intv. 1s (15.9 sec) 1s (56.6 sec) 1s (15.9 sec)	Qually/ 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6	55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (Utilization 7%, 1/10000 msg/sec 7%, 1/10000 msg/sec	Recomm. 0 0
Jnit Group 3 Statu Overview: Initializing: Faulty: Disabled: Listening: Pre-Master: Master: Pasake:	s Details	P Controlled Master Anilable Master: 5	IP Controller Details: Ann. Intv. 1s (15.9 sec) 1s (56.6 sec) 1s (15.9 sec) 1s (15.9 sec) 1s (15.9 sec)	Quality 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6	55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (Utilization %, 1/10000 mg/sec %, 1/10000 mg/sec %, 1/10000 mg/sec	Recomm. 0 0 0
Unit Group 3 Statu Overview: Intikizing: Faulty: Disabled: Listening: Pre-Master: Master: Passive: Unaster: Stave:	s Details	P Controlled Master Available Masters: 5 # Address 1 172.27,38.202 2 172.27,38.203 3 172.27,38.205 5 172.27,38.201	Ann. Intv. 11 (15.9 sec) 18 (15.9 sec) 18 (35.6 sec) 18 (15.9 sec) 18 (15.9 sec) 18 (15.9 sec) 18 (15.9 sec)	Quality 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6	55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (55535, 128, 0 (Utilization 7%, 1/10000 mg/acc 7%, 1/10000 mg/acc 7%, 1/10000 mg/acc 7%, 1/10000 mg/acc	Recomm. 0 0 0 0 0
Unit Group 3 Statu Overview: Intializing: Faulty: Disabled: Listening: Pre-Master: Master: Passive: Uncalibrated: Slave: Device Informati	s Details	P Controlled Master Available Master: 5	IP Controller Details: Ann. Intv. 1s (15.9 sec) 1s (15.9 sec) 1s (15.9 sec)	Cually 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 249, 0x28, 6 128, 249, 0x28, 6	55535, 128, 0 (55335, 128, 0 (55335, 128, 0 (55535, 128, 0 (55535, 128, 0 (Utilization %, 1/10000 mg/aec %, 1/10000 mg/aec %, 1/10000 mg/aec %, 31/10000 mg/aec	Recomm. 0 0 0 0
Jnit Group 3 Statu Overview: Intializing: Faulty: Disabled: Listening: Pre-Master: Master: Passive: Uncalbrated: Slave: Device Informat @ 172.16.38.22	s Details	P Controlled Master: 5 # Address 1 17227.38.202 2 17227.38.204 3 17227.38.204 4 17227.38.201	IP Controller Details: Ann. Intv. 16 (155 sec) 16 (256 sec) 16 (159 sec) 16 (159 sec)	Cually 138, 248, 0x28, (138, 248, 0x28, (138, 248, 0x28, (138, 248, 0x28, (128, 248, 0x28, (35935, 128, 0 (35535, 128, 0 (Utilization %, 1/10000 mg/sec %, 1/10000 mg/sec %, 1/10000 mg/sec %, 31/10000 mg/sec	Recomm. 0 0 0 0 0
Jnit Group 3 Statu Overview: Initializing: Faulty: Jusabied: Littening: Pre-Master: Master: Pasake: Uncalibrated: Slave: Device Informat I 72.16.38.22 Port State:	s Details 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	P Controlled Master Available Master: 5	Details: Details: Ann. Intv. 1s (15.9 sec) 1s (15.9 sec) 1s (15.9 sec) 1s (15.9 sec)	Cuality 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6 128, 248, 0x28, 6	55535, 128, 0 (55335, 128, 0 (55335, 128, 0 (55535, 128, 0 (55535, 128, 0 (Utilization P%, 1/10000 mg/aec P%, 1/10000 mg/aec P%, 1/10000 mg/aec P%, 1/10000 mg/aec	0 0 0 0 0

6.2.12 Symbol 'Statistics Summary' - Statistics / Figures of the selected Group(s)

When you click on the symbol "Statistics Summary" a window opens up, which displays a summary of the current simulation statistics. If you have not selected a simulation group, a complete statistics is displayed. If a group is selected, only a group specific statistics is shown.

Summary	X		
Overall Su	immary		
Units:	000021	←	Anzahl der simulierten Einheiten
Sent (∆):	000025	←	Anzahl der in der letzten Sekunde gesendeten
Sent (Ø):	000021	←	Anzahl der durchschnittlich gesendeten Pakete
Recv (∆):	000056	←	Anzahl der in der letzten Sekunde empfangenen
Recv (Ø):	000044	←	Anzahl der durchschnittlich empfangenen Pakete
Runtime:	00:45:19.890		Laufzeit der aktuellen Simulation
	Close		

6.2.13 Symbol 'Reset All Statistics' - Resetting all Groups

When you click on the symbol "Reset All Statistics", all the statistics are reset. Please note, that a reset cannot be reversed. This is why you should not forget to save the statistics before you reset them.

6.2.14 Symbol 'Reset Statistics' - Resetting Statistics of the selected Group(s)

When you click on the symbol "Reset Statistics", the statistics of the selected group(s) are reset. Please note, that a reset cannot be reversed. This is why you should not forget to save the statistics before you reset them.

6.2.15 Symbol 'Daemon Preferences' - Default settings of the simulation service

When you click on the symbol "Daemon Preferences", a new window opens up where you can configure the simulation service. This is divided into the following five tabs:

Basic Settings (General):

In this tab you can configure general settings, e.g. the type of user registration.



Anonymous Login (Disable User Authentication) If you activate the anonymous login, the user authentication will be disabled. Users will automatically login as "Anonymous".

Send Daemon Information perdiodically (UDP Broadcast) Switching on and off the every second transmission of UDP broadcast packets, by which simulation services are detected on the network automatically from the "Remote Control Interface".

UDP Source Port

UDP source port for the transmission of UDP Broadcast Packets. Default settings: 65352.

UDP Dest. Port

UDP destination port, to which UDP Broadcast Packets are send. Default settings: 65353.

TCP Source Port

TCP source port, which is used to establish a connection to the "Remote Control Interfaces".

User Management (User Database)

In this tab you can create, edit or delete a user profile. When registering for the first time, only the user: "root" without a password exists. If you want to create an additional profile click the "+" button.

General	User Database	Interfaces	Addressing	Statistics
Name:]	adm	in S	
Түре:		Adm	inistrator	~
Private				
Password:		•••	••	
Confirm Pa	assword:	•••	••	
OK	Cance	el		
	Turne			
Name	туре		Private	4
admin	Admir	nistrator	Private	4
admin user	Admir Defau	nistrator It User	Private	4
admin user info	Admir Defau Info U	nistrator It User ser	Private	
Name admin user info	Admir Defau Info U	nistrator It User ser	Private	4 9 9 9
Name admin user info	Admir Defau Info U	nistrator It User ser	Private	4 9 9 9
Name admin user info	Admir Defau Info U	nistrator It User ser	Private	4 9 9 8

<u>Name</u>

Freely selectable user name.

Туре

The rights of a user depend on its user type. The "Administrator" has unlimited configuration rights. The "Default User" can basically use all the control functions, but is not allowed to configure the simulation service. The "Info User" can only view the statistics of the simulation groups.

<u>Private</u>

Switching the "Private" function on or off. "Private User" are not published via the UDP Broadcast Packets, they must be known and entered manually.

Password / Confirm Password

Freely selectable password (min. 1 character). To confirm, reenter the selected password.

Network Interfaces (Interfaces)

In this tab all the network interfaces of the simulation computer are listed. The use can assign an alias to each interface (i.e. network description). Furthermore, Name, MAC address, as well as all the assigned IP-addresses can be displayed.

	references						_
General	User Da	tabase	Interfac	ces	Addressing	Statistics	
Name:				eth0]
MAC Addi	ress:			54:BE	::F7:08:26:80]
IP Addres	s(es):			10.0.0).1	* *	
Alias:		Cancel]
Index	Name	MAC Addr	ess		Alias		Ĩ
2	eth0	54:BE:F7:	08:26:80)			
3	eth1	00:1B:21:	11:78:BE				
4	eth2	54:BE:F7:	08:26:7F	-			
				ſ	Cancel	ОК	

Network Addresses (Addressing)

In this tab you can configure limits and default values for MAC, IPv4 and IPv6 addresses.



Min. MAC Address Smallest configurable MAC address.

<u>Default MAC Address</u> Standard pre-set MAC address.

<u>Max. MAC Address</u> Biggest configurable MAC address.

<u>Min. IPv4 Address</u> Smallest configurable IPv4 address.

<u>Default IPv4 Address</u> Standard pre-set IPv4 address.

<u>Max. IPv4 Address</u> Biggest configurable IPv4 address.

<u>Min. IPv6 Address</u> Smallest configurable IPv6 address.

<u>Default IPv6 Address</u> Standard pre-set IPv6 address.

<u>Max. IPv6 Address</u> Biggest configurable IPv6 address.

Statistics (Statistics)

172.16.101.119 P	references					×
General	User Database	Interfa	ices	Addressing	Statistics	
Print Sta	atistics to stdout ev	ery sec	cond (-	s)		
Print Sta	atistics to file period	dically				
Interval:			30			sec
File:			/root/l	Meinberg/mpsro	c/Statistics/s	
			[Cancel	ОК	

Print Statistics to stdout every second (-s) Switching on or off the "every second" data output of the simulation statistics to "stdout" (standard output).

Print Statistics to file periodically Switching on or off the cyclical recording of the simulation statistics.

<u>Interval</u>

Time period between two saving processes of simulation statistics in seconds.

<u>File</u>

File path and file name of the cyclically recorded statistics file.

6.2.16 Symbol 'Disconnect'

By clicking on the symbol "Disconnect" a connection to the simulation service is closed.

6.2.17 Group Overview

In area 2 (see chapter "Connection Tab") you will find a list of configured simulation groups. Next to the detailed information on the simulation parameters, it also contains a status display (green = active, red = inactive), information about the owner of the group (Owner) and the current runtime (Runtime) of the simulation.

Right-click on the headline to fade-in or hide individual columns.

With a **Right-click** on individual or several selected groups a context menu appears. This offers an additional possibility to perform functions from the main menu.

With a **Double-click** on one of the simulation groups you get directly to the edit window of the group.

PS Remote Control								- 0
neinberg P	ROTOCOL	SIMULATOR M						
in 172 16 101 119 Oversie								
Over the								
🕂 😒 🗱 💌	N 🕞	۵ 🍬 🔳 💌	1		3 🛃 🛃		User: admin	ې 🖗
Status ID Owner Mode	Units Interface	Netw. Protocol First /	Address		Protocol Parar	neters		Runtime
at root NTP	10 (3, etc.	But E0 45 70 55 70 0	0, 172, 16, 36, 20		Str. 12 - Ref. 172.27.38.200 - k	liv: 1000ms - Port	123	04:16:12
#1 root PTP #2 root PTP	10 pp2 1 e9	Edit Group Delete Group Stop Group Reset Group Statistics Status Details Statistics Summary	A, 172.16.38.210/16 A, 172.16.38.220/16	< < < <	Deemon Status ID Name Owner Mode	6.201 - Ann 1s, S; ain 0 - Ann 1s	ync 1a, Reg 1a	04:14:03 04:13:10
				~	Units			
Unit Group 1 Statistics				4	Interface MAC Cache			
MAC Resolution (ARP/NDP):		PTP:		1	Netw. Protocol			
Requests sent	2600	Announces sent	0 (0.00/sec	1	First Address	sent	0	
Responses received:	2600	Synce sent:	0 (0.00/sec		Gateway	selved.	0	
Responses unrelatable:	0	(PiDeley Requests sent:	0 (0.00/sec		DSCP	timed out:	0	
Requests received:	4564	(P)Delay Responses received	0 (0.00%)		Timeout (ms)	relatable:	0	
Responses sent:	4564	(P)Delay Requests timed out:	0 (0.00%)	$\overline{\mathbf{v}}$	Protocol Parameters	ent.	0	
		(P)Delay Responses unrelated	ie: 0	-	VLAN			
NTP:					Failure	received:	0	
Requests sent.	157230 (10.00/Sec)	Announces received: Room Associations received:	0 (0.00/sec		Date	nL.	0	
Renuests Smell out	1841 (1.17%)	Rogue romounces received.	0 (0.00/sec		Destine	resident	0	
Responses unrelatable:	793	Follow Ups received:	0 (0.00/sec	×.	Nunome			
Requests received:	0 (0.00/sec)	(P)Delay Requests received.	0 (0.00/sec		Reset			
Responses sent:	0 (0.00%)	(P)Delay Responses sent	0 (0.00%)	-	Jenuareo Falores.		0	
					Simulated Recoveries:		0	
		Managements sent:	© (0.00/sec)					

6.2.18 Simulation Statistics

In area 3 (see chapter "Connection Tab") you will find an overview chart of the current simulation statistics. If in the group overview one or more groups are selected, the statistics will only be displayed for the selected group(s). Otherwise a summarized complete overview will be displayed. To deselect a selected group, left-click on the headline of the group overview.

To save the statistics click on the saving symbol (see graphic):



6.3 Overview Tab

In the overview tab, the groups which have been created on connected simulation services are displayed in a list. The overview tab is similar to the connection tab, the only difference is that is does not have the configuration menu. Double-click on one of the simulation groups and you will directly get to the corresponding connection tab. In addition, the saving symbol offers the possibility to save a summary of all simulation statistics.

NEINBER	6	PRC	отос	OL SIM	ULATOR	M-			
470 40 404 446		niou							
n 172.16.101.118) Ove	iview							
Daemon Status	ID O	wner M	lode Uni	ts Interface	Netw. Protocol	First Address	Protocol Paramete	rs	Runtime
172 16 101 119	#0 :	admin 1	NTP 1	eth2	IPv4	EC:46:70:EE:00:00 172 16 38 150/1	Str. 12 - Ref. 172 27 38 12 - Inty 10	00ms - Port 123	00:00:51
172.16.101.119	#1 a	admin 1	NTP 10	eth2	IPv4	EC:46:70:FF:00:0A, 172.16.38.160/1	5 Str. 12 - Ref. 172.27.38.14 - Intv. 1	00ms - Port 123	00:00:34
172.16.101.119	#2 8	admin M	NTP 1	eth2	IPv4	EC:46:70:FF:00:14, 172.16.38.170/1	Str. 12 - Ref. 172.27.38.11 - Intv. 25	500ms - Port 123	00:00:44
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