

## Meinberg Radio Clocks

Lange Wand 9  
31812 Bad Pyrmont, Germany  
Phone: +49 (5281) 9309-0  
Fax: +49 (5281) 9309-30  
<https://www.meinbergglobal.com>  
[info@meinberg.de](mailto:info@meinberg.de)

## MBGPROTOSIM: NTP / PTP Simulation Software

The Meinberg Protocol Simulator allows to simulate a broad selection of time sync nodes such as NTP servers and clients, and PTP Grandmaster Clocks and Slaves.

Meinbergs mbgprotosim enables you to test your network infrastructure by simulating hundreds or thousands of clients in your own NTP/PTP implementation.

### Important Note

This product is no longer available and may have been replaced by a newer product. We will, of course, continue to provide support for units that have already been purchased and are still in use. Please contact our [1][Sales Department](#) for further details.

This product has been discontinued and has been replaced with: [2]

### Key Features

- Simulation of network nodes with own MAC and IP addresses
- Dynamic address resolution via ARP (IPv4) or NDP (IPv6)
- VLAN simulation with configurable ID and priority
- NTP: Simulation of servers and/or clients in the network PTP: Simulation of unicast/multicast masters and/or slaves in the network Simulation of large node groups to create load tests Simulate failures of the simulated nodes for configurable durations
- Comprehensive configuration options for each simulated node Save/load particular group configurations for repetitive tests
- Propagation delay analysis (slave-to-master/master-to-slave) Detailed analysis of the simulation by statistical records
- Supports multiple physical network interfaces to distribute the load
- Draw statistical graphs based on the simulation results during the simulation
- Simulation of date and leap second

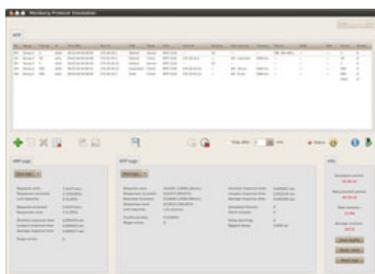
## Description

Two USB sticks are provided: One can be used to boot almost any PC into a Linux based live system running the simulator, the other one is the license key. The live system will not touch whatever is installed on the PC/server used for the test and therefore transforms existing hardware into a flexible and feature-rich NTP/PTP protocol simulator. After removing the live USB stick, the PC will resume its regular operating system installation.

The Simulator is capable of simulating a few nodes, or thousands of nodes, and test your network to determine its performance with hundreds of PTP slaves - without having to actually install them just for the test.

The Meinberg Protocol Simulator can be combined with the Meinberg M600/MRS/PTPv2 2-port Grandmaster to test the potential impact of several PTP nodes on the timing accuracy and stability of your network.

## Screenshots



### Main dialog

This is the main dialog box of the Meinberg Protocol Simulator. The protocol selection box is located at the top right of the dialog box. The current group configuration is shown in a list below. The main menu of the software is located in the center of the dialog box. Statistics relative to the current simulation are shown at the bottom.



### General parameter configuration

This dialog shows the general parameter configuration, which has to be set up for every simulated group. Here, the physical interface and the IP version can be selected, and the simulated MAC and IP address and special features like failure simulation, VLAN simulation and propagation delay analysis can be configured.



### Creation of NTP clients

With this configuration, the user creates NTP clients in load test mode. This means that the NTP client will send a new request instantly after receiving a reply to the past request. With this configuration, you can stress your NTP server with several thousand NTP requests per second..



### Creation of PTP Multicast master

In this case, a PTPv2 Multicast master is created in the default profile. It will be based on network layer 3 and use an end-2-end delay mechanism. You can also determine parameters which are decisive for the best master clock algorithm, such as the priorities or the clock class.



### Creation of PTP Unicast slaves

With this configuration, the user creates PTP Unicast slaves in the Telecom profile. The subdomain number and the message rates are configured automatically for Telecom profile, but can be changed manually afterwards.

## Characteristics

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<b>Operating System</b>	Debian 6 - 64 bit Linux live system (included in delivery). Also usable on other 64 bit Linux distributions.  <b>System Requirements:</b>  * High performant, USB bootable Simulation Computer  * 1.6 GHz CPU (dual core)  * 4 GB RAM  * 1x or more compatible network interface cards (e.g. Intel EtherExpress 1000, Realtek 8169)  * compatible Graphics Adapter and monitor (min. resolution 1280 x 1024, recommended 1920 x 1080)
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<b>Software License</b>	2 year License (24 months) and  * Software Starter Kit  * Including support and updates  Lifetime License available upon request
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<b>Supported Modes</b>	  * NTP Clients (IPv4, IPv6)  * NTP Servers (IPv4, IPv6)  * PTPv1 (IEEE 1588-2002) - Multicast Slaves (IPv4)  * PTPv2 (IEEE 1588-2008) - Multicast Slaves (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) - Multicast Masters (IEEE802.1/Ethernet Layer 2, IPv4, IPv6) - Unicast Slaves (IPv4, IPv6) - Unicast Masters (IPv4, IPv6)  * <u>Selectable PTP options:</u> - Default/Telecom/Power Profiles - E2E and P2P delay measurements - Different Sync/Announce/Delay intervals
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## Configuration

- \* Number of clients
- \* Selection of network interface
- \* DSCP/Per-hop behaviour (Default/Expedited/Custom)
- \* Simulated MAC and IP address (IPv4/IPv6)
- \* MAC resolution type (group-/clientwise)
- \* Date simulation and leap second simulation
- \* Failure simulation (Time Between Failures & Time To Recover)
- \* VLAN simulation (Priority/ID/Strict checking)
- \* Propagation delay analysis (Warning threshold in ms)

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## NTP Parameters

- \* Server: Stratum
- \* Client:
- \* Source port (NTP/Random dynamic)
- \* NTP server address
- \* NTP polling interval:  
(standard interval / custom interval / fast sync / load test)
- \* Timeout (ms)

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## PTP Parameters

- \* **Unicast Master:**
  - Profile (Default/Telecom)
  - Subdomain number
  - Send follow-up (One-Step/Two-Step)
- Priority 1
- Grandmaster Clock Class
- Grandmaster Clock Accuracy
- Grandmaster Clock Variance
- Priority 2

Timesource

UTC Offset

**\* Unicast Slave:**

Profile (Default/Telecom)

Subdomain number

PTP server address

Announce message rate (128/s .. 1/128s)

Sync message rate (128/s .. 1/128s)

Delay request rate (128/s .. 1/128s)

UTC offset

**\* Multicast Master:**

Profile (Default/Power Systems/

Peer-2-Peer)

Protocol layer (Layer 2/Layer 3)

Subdomain number

Master table size

Announce receipt timeout

Send follow-up (One-Step / Two-Step)

Priority 1

Grandmaster clock class

Grandmaster clock accuracy

Grandmaster clock variance

Priority 2

Timesource

Announce message rate (128/s .. 1/128s)

Sync message rate (128/s .. 1/128s)

Delay request rate (128/s .. 1/128s)

Delay mechanism (E2E/P2P)

UTC offset

**\* Multicast Slave:**

PTP Version (PTPv1/PTPv2)

Profil (Default/Power Systems/Peer-2-Peer)

Protocol layer (Layer 2/Layer 3)

Subdomain number

Announce receipt timeout

Master table size

Delay request rate (128/s .. 1/128s)

Delay mechanism (E2E/P2P)

UTC offset

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## Manual

The English manual is available as a PDF file: [3][Download \(PDF\)](#)

**Links:**

[1] <mailto:sales@meinberg.de>

[2] [https://www.meinbergglobal.com/english/products/mps\\_v2.htm](https://www.meinbergglobal.com/english/products/mps_v2.htm)

[3] <https://www.meinbergglobal.com/download/docs/manuals/english/mbgprotosim.pdf>