



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

MPS v2: NTP / PTP Simulation Software

The simulation software offers the possibility to simulate time synchronization devices, such as NTP Server and Clients or PTP Grandmaster and Slaves in a network.

The MPS allows you to test your existing network infrastructure by simulating hundreds or thousands of devices. You will also have the possibility to test your own NTP- or PTP implementation on standard compliant behavior, by examining its interoperability with a simulated device.

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
- Simulation control from the same or from a remote system
- Download Demo Version and Updates MPS v2
- Simulation of NTP servers and / or clients Simulation of PTP unicast / multicast masters and / or slaves Simulation of large client groups to produce high loads Simulation of failures in configurable intervals and variable length
- Extensive configuration options for each simulated device Saving / Loading configurations for repeated execution of a test
- Detailed analysis of the simulation by statistical recording
- Use different network interfaces for load sharing
- Simulation of date and leap second



Description

The delivery contains two USB sticks: One of the USB sticks can be used to boot a Live-Linux-System, on which the simulation service is started automatically after successful booting procedure, on any computer or server. The simulation can now be controlled either from the same system or from a remote computer. The second USB stick provides a license key and has to be inserted into the simulationsystem during the simulation, to have access to the complete functionality of the software. By booting the Live-System all data on your computer or server will not be changed, which means that your hardware is only transformed into a flexible and functional NTP-/PTP-simulator for the duration of the simulation and can be used as before after the simulation.

The software allows you to create a few network nodes for a basic interoperability test of your implementation, as well as performance tests of your network by a mass simulation of devices, without the need of installing these devices for the test.



Boot menu

In the boot menu of the USB Live-System you may choose between desktop mode and terminal mode. If you want to control the simulation from the same computer or server, the desktop mode is recommended. For all other purposes the terminal mode is sufficient. If no mode was selcted the system will automatically start in the desktop mode, after a short while. This is to make sure that the simulation service is started automatically and is ready for remote control, even without user identification



in Overvan		
envice control (localhead)	Manual connection:	
00	IP Address 0	
PRO SIDIM		
		Include IPv4
nya-tua	· •	
	*	
nya dia	*	
	•	
i	-	
Statu: Online	•	
Senar Onive Version 22.1		
Sena: Onive Verson: 22.5 Loareat Universed		

Main tab

In the main tab of the Remote Control Interface you will find an overview of the current simulation services in the network. If you posses several licenses, you can simultaneously control several simulation services from the same computer. If one of the services does not appear automatically, i.g. because it is in a seperate subnet, you can manually establish a direct connection by using the text field "Manual Remote Connection".



Connection tab

After having successfully established a connection to a simulation service you can control the simulation via the connection tab. Simulation groups can be created, edited or deleted and started or stopped individually. Additionally you can save and look at simulation statistics.



TEINBERG PROTOCOL SIMULATION						
Daman Balan	0 0	Mate Units Monthers	Rea Person	First Address Partnerst Parts	Antes Autom	
Summarian/ Statist	ice .					
		e10		PTP Unicase		
MAC Resolution (ARP		PTP:	11000	PTP Unicest		
Summarized Statist MAC Assolution (AAP Trajects art)		Arrentice serie		Transmission Requests sent	. (
MAC Resolution (ARP Projects and Projects and		Arrenovan sert. Sprice sert	8-(5-001am)	Transmission Requests sent Transmission Grants scattered	:	
MAC Resolution (ARP Reports self) Response reasond Response treat out		Arresonan sent. Aprilia sent Aprilia sent	8-(8-201erd) 8-(8-201erd)	Frankrisson Regards and Frankrisson Grants received Frankrisson Denaits received		
MAC Resolution (XAP Reports set) Reports Institut Reports Institut Reports Institut		Arrowness serit Sprin serit Foliow Sprin serit (P.Comp. Response serie	1-0-001er0 1-0-001er0 1-0-001er0	Transmission Requests sent Transmission Grants scattered		
MAC Resolution (ARP Reports set) Reports Institute Reports Institute Reports constitute Reports research		Arrows set. Spin set Folio (p. set (*One fogues set (*One fogues set	10.00m0 10.00m0 10.00m0 10.00m0	Transmission Requests and Transmission Grants received Transmission Genetic received Transmission Cancels and		
MAC Resolution (ARP Reports set) Reports Institute Reports Institute Reports constitute Reports research		Annanias ant Sprin ant Folia (pa ant Philing Regions ant Philing Regions reason) (Philing Regions read ant	1.0.00w0 1.0.00w0 1.0.00w0 1.0.00w0	Transmission Regionals and Transmission Grants received Transmission Generals received Transmission Generals and Transmission Regionals received		
MAC Resolution (ARP Reports son) Responses reached Responses reached Responses uncertailte Responses reached Responses text		Arrows set. Spin set Folio (p. set (*One fogues set (*One fogues set	10.00m0 10.00m0 10.00m0 10.00m0	Transmission Respects and Transmission Genetic reariest Transmission Genetic worked Transmission Respects reariest Transmission Respects reariest		
MAC Resolution (ARP Property and Property statistic Property stratistic Property stratistic Property statistic Property statistic Property statistic NTP:	and	American with Spice with Addres (pa with Addres (pa with Addres (Response washed (Addres Response visioned (Addres Response visioned)	1.5.00 1.5.000 1.5.000 1.5.0000000000	Transmission Responds and Transmission Genetic coannell Transmission Genetic coannell Transmission Responds coannell Transmission Responds coannell Transmission Genetic and		
MAC Resolution (ARP Reports and Reports frained Reports frained Reports frained Reports frained Reports and Reports and RTP:	1.004y	American seri. Spin seri Adar (posit) (Adar Arguniti seri (Adar Arguniti seri (Adar Arguniti seri (Adar Arguniti seri (Adar Arguniti seri Adar Arguniti seri American seated	1.5.00m 1.5.00m 1.5.00m 1.5.00m 1.5.00m 1.5.00m	Transmission Respects and Transmission Genetic reariest Transmission Genetic worked Transmission Respects reariest Transmission Respects reariest		
MAC Association (AAP Aspanets ant Aspanets ant Aspanets varied Aspanets varied Aspanets varied Aspanets varied Aspanets varied Aspanets varied Aspanets varied	1,0.00m	Annunum sent Bytes and Police (so and Police) Requests and Police Requests annual Police Requests annual Request annual Request annual	1330w) 1330w) 1330w) 1330w 1330w 1330w 1330w 1330w)	Exercised Report and Exercised Serie sector Exercised Oracle sector Exercised Oracle sector Exercised Constants and Exercised Oracle and Exercised Oracle and Exercised Oracle and Exercised Oracle sector		
MAC Ansolution (AAP Trapacts set) Trapacts set) Trapacts set) Trapacts set) Trapacts set) Trapacts set) Trapacts set) Trapacts set) Trapacts set)	1.004y	Annumper and Spectra and Folia i (point) (P.Data Regions and (P.Data Regions and (P.Data Regions and (P.Data Regions and (P.Data Regions and Region Annumper and Region Annumper Spectra and	1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml	Responses Program and Responses Control water Responses Control water Responses Control and Responses Control and Responses Control and Responses Control and Responses Control and Responses Control and		
MAC Resolution (ARP Reparks with Reparks test Reparks t	1.5.8% 1.5.8% 1.5.8%	Amourps and Byte and Path (grant) (P.Comp Reports water (P.Comp Reports water (P.Comp Reports water (P.Comp Reports water Amourps of the state Amourps of the state Report Amount Equity water (P.Comp Reports water (P.Comp	1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml	Revenues Republic set Investigat durit control Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution Revenues Constitution		
MAC Association (ARP Argunatic sent Argunatic sent Argunatic sentential Argunatic sentential Argunatic sent Argunatic sent Argunatic sent Argunatic sent Argunatic sentential Argunatic sententi out	1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg	Annumper and Spectra and Folia i (point) (P.Data Regions and (P.Data Regions and (P.Data Regions and (P.Data Regions and (P.Data Regions and Region Annumper and Region Annumper Spectra and	1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml	Insurance Republic set Experiment Control warned Experiment Dank warned Experiment Control warned Experiment Control warned Experiment Control warn Experiment Control world MacelControl Control world Experiment Experiment Experiment Experiment Experiment		
MAC Resolution (ARP Trapers sent Trapers tent	1.5.8% 1.5.8% 1.5.8%	Amourps and Byte and Path (grant) (P.Comp Reports water (P.Comp Reports water (P.Comp Reports water (P.Comp Reports water Amourps of the state Amourps of the state Report Amount Equity water (P.Comp Reports water (P.Comp	1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml 1.5.00ml	Transmission Angundo sont Transmission Control transmit Transmission Control transmit Transmittania Transmitta		
MAC Resolution (ARP Reparts set) Reparts realised Reparts realised Reparts realised Reparts realised Reparts realised Reparts set Reparts	1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg	Research and Research Pallen (passed Poline Reparks and Poline Reparks and Poline Reparks rended Repark Announces search Repark Announces search Repark Announces Research Repark (passed) Poline Reparks search	1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml	Insurance Republic set Experiment Control warned Experiment Dank warned Experiment Control warned Experiment Control warned Experiment Control warn Experiment Control world MacelControl Control world Experiment Experiment Experiment Experiment Experiment		
MAC Resolution (ARP Reparts set) Reparts realised Reparts realised Reparts realised Reparts realised Reparts realised Reparts set Reparts	1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg 1.0.0mg	Research and Research Pallen (passed Poline Reparks and Poline Reparks and Poline Reparks rended Repark Announces search Repark Announces search Repark Announces Research Repark (passed) Poline Reparks search	1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml 1.0.00ml	Transmission Angundo sont Transmission Control transmit Transmission Control transmit Transmittania Transmitta		

Overview tab

The overview tab offers an overview of all simulation groups, current simulations and their statistics, that are created on the currently connected simulation services.

Characteristics

Operating System	64 bit Linux Mint Live system (included in scope of delivery). Installation also possible on other Linux distributions.										
	Minimum system requirements:										
	 * USB bootable simulation computer * 1.0 GHz CPU (dual core) * 1 GB RAM * At least 1 compatible network adapter * Compatible Graphics Adapter 										
						Software License	2 year License (24 months) and				
							* Software Starter Kit				
							* Including support and updates				
		Lifetime License available upon request									



Supported Modes

- * NTP Clients (IPv4, IPv6)
- * NTP Servers (IPv4, IPv6)
- * PTPv1
- * Multicast Masters (IPv4)
- * Multicast Slaves (IPv4)
- * PTP v2 / PTP v2.1 (IEEE 1588-2008)
- * Multicast Slaves (IEEE802.1 / Ethernet Layer 2, IPv4, IPv6)
- * Multicast Masters (IEEE802.1 / Ethernet Layer 2, IPv4, IPv6)
- * Multicast Auto (IEEE802.1 / Ethernet Layer 2, IPv4, IPv6)
- * 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)
- * Alternate PTP options:

* Telecom (G.8265.1, G.8275.1, G.8275.2) / Power (C37.238) / IEEE 802.1AS / SMPTE Profile

- * One-Step/Two-Step Clock Mechanism
- * Unicast Load Balancing
- * E2E und P2P Delay Mechanismus (Hybrid Mode)
- * Different Sync/Announce/Delay Request Intervals
- * Symmetric HMAC-SHA256 authentication



Configuration

Main Configuration

- * Number of simulated devices
- * Selection of the network adapter
- * MAC-address resolution (cacheTimeout, group- / appliances manner)
- * Network protocol (IEEE802.1 Layer 2, IPv4, IPv6)
- * Simulated MAC and IP address, subnet mask, gateway
- * DSCP/Per-Hob-Behaviour
- * TTL/Hop Limit

Special Configuration

- * VLAN Simulation (Priority/ID)
- * Failure simulation (Time Between Failures & Time To Recover)
- * Date and leap seconds simulation

NTP Configuration

* Server: Stratum Precision Root Delay **Root Dispersion** Reference ID Source Port (Standard/Custom)

*** NTP Authentication**

(MD5, SHA1, AES128CMAC)

* Client: Server IP-Address Polling Interval (Custom/Fast Sync/Standard, 1000/s



Manual

The English manual is available as a PDF file: [1]Download (PDF)

Links:

[1] https://www.meinbergglobal.com/download/docs/manuals/english/mps_v2.pdf