

CT920 LANforge-ICE 45Mbps WAN Emulator

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The CT920 is an excellent choice for a portable network emulator supporting speeds up to 45Mbps (bi-directional). The CT920 has no moving parts and will fit into a small travel bag or briefcase for easy portability. It is also completely silent, so you can include it in your customer demos and presentations. Additional software licenses can enable additional WanLinks or higher-speed emulations for future upgrades. No additional hardware or software is required, but it is suggested that you manage the system using the LANforge-GUI on a separate machine. The CT920 can also be managed over a serial console in text mode.





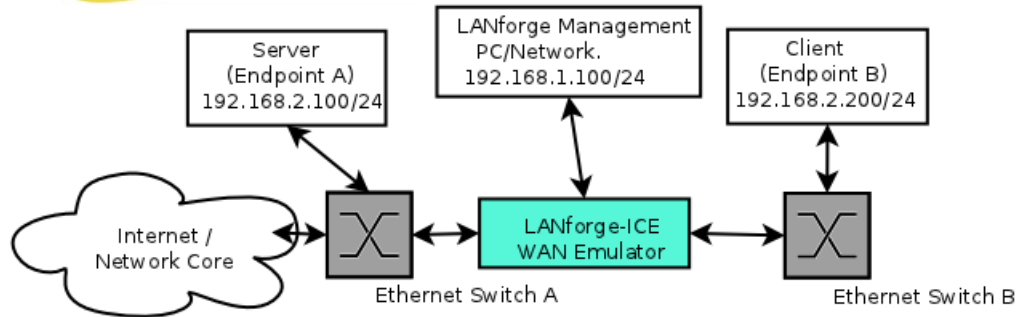
NOTE: This product may have a different hardware configuration than the system pictured above.
Refer to your official quote for details.

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Example Network Diagram



LANforge ICE Network Diagram



This diagram shows how one might use LANforge ICE to emulate a Wide Area Network between a Server and Client. When the Client communicates with the Server, the traffic will flow through the Ethernet switches and then through LANforge ICE. LANforge ICE will enforce the rate limitation and other network emulation as configured. The Client and Server are on the same subnet. For a simpler configuration, the Client and Server can be directly connected to the LANforge ICE system.

Quick Start Guide

1. Connect Management Ethernet port to Management network or management PC.
2. Connect Client to eth0 and Server to eth1. The eth0 <-> eth1 interfaces will be bridged and this bridge will inject the network emulation.
3. Connect power brick to standard US or European AC power source.
4. Install the LANforge-GUI on a separate management PC or Laptop. Windows and Linux GUIs are supported: Select the correct one from the CDROM or Candela Technologies Download page and install it.
5. The CT920 should now boot. If DHCP is enabled on the Management network, the CT920 will automatically acquire an IP address. If DHCP is not available, the IP address will be set to 192.168.1.101 by the LANforge scripts.
6. Start the LANforge-GUI on the management PC and click the 'Discover' button. It should find the CT920 appliance and add the IP address to the drop-down box in the Connect widget. Press 'Connect' and you will be connected to the CT920.
7. Select the WanLinks tab in the GUI. One of the pre-configured tests should already be running. You may double-click the row in the top section to modify the configuration. You can also view a real-time report of the test with the 'Display' button. Any modifications take place immediately after you click 'Submit'.

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LANforge-ICE Related Screen Shots

WanLinks Tab

LANforge Manager Version(5.2.4)

Control Reporting Tear-Off Help

Stop All

Restart Manager

Refresh

HELP

Layer-4

Generic

Test Mgr

Resource Mgr

Serial Spans

PPP-Links

Event Log

Alerts

Port Mgr

Messages

Status

Layer-3

L3 Endps

VoIP/RTP

VoIP/RTP Endps

Armageddon

WanLinks

Collision-Domains

File-IO

Rpt Timer: fast (1 s) Go

Test Manager all

Select All

Start

Switch

Stop

Clear

Hide Stopped

Display

Create

Modify

Batch Modify

Delete

WanLinks for Selected Test Manager

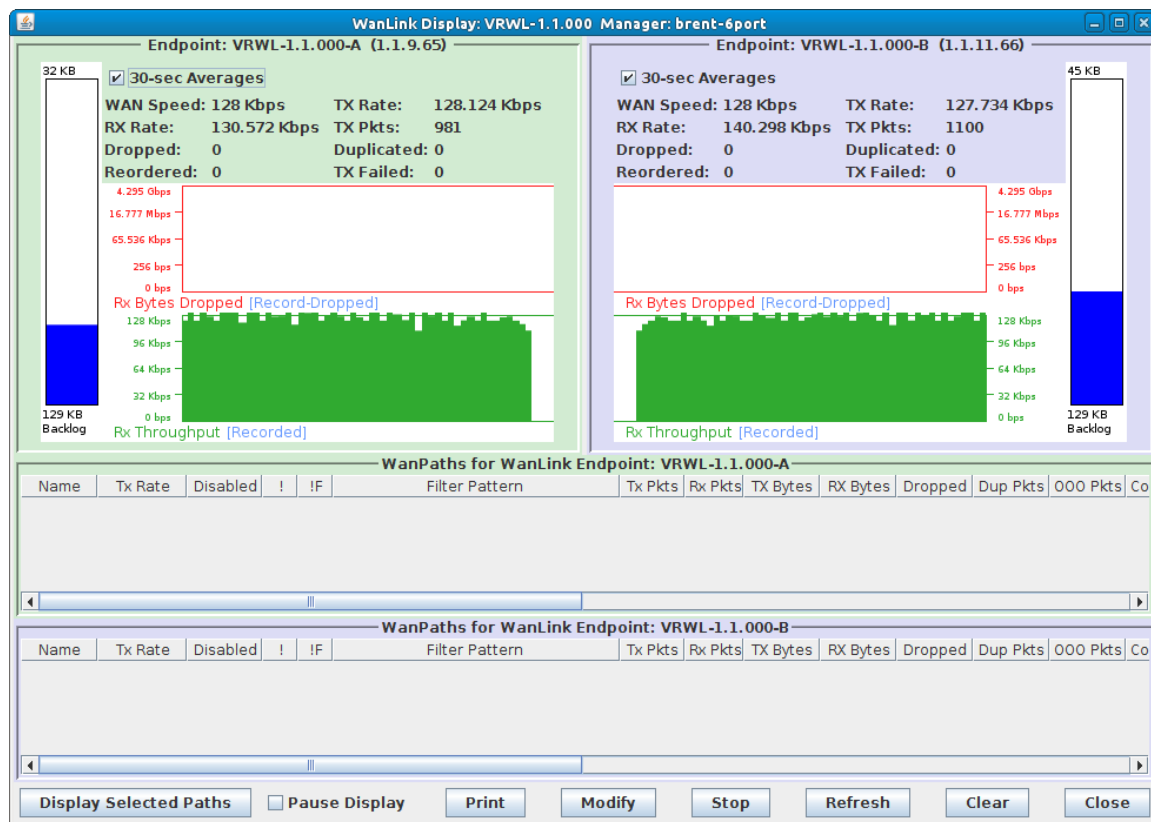
Name	EID	K-M	State	Endpoints (A <-> B)	Pkt Tx A->B	Pkt Tx A<-B	Rate A->B	Rate A<-B	Rpt Timer
VRWL-1.1.000	6.22	✓	Run	VRWL-1.1.000-A...	565,080	439,422	1,000,000,000	1,000,000,000	1.00
VRWL-1.1.001	6.3	✓	Run	VRWL-1.1.001-A...	4,054,185	3,658,228	1,000,000,000	1,000,000,000	1.00
VRWL-1.1.002	6.2	✓	Run	VRWL-1.1.002-A...	18,632	18,593	44,736,000	44,736,000	1.00
VRWL-1.1.003	6.4	✓	Run	VRWL-1.1.003-A...	3,657,007	4,040,390	1,000,000,000	1,000,000,000	1.00

All WanLink Endpoints

WPs	Name	Run	Script	Max Rate	Tx Pkts	Rx Pkts	Tx Rate	Tx Drop %	Dropped	Tx-Failed	Failed-Late	TX Bytes
+	VRWL-1.1.0...	✓	Stopped	1,000,000,...	439,422	565,088	1,014,228	0	0	0	0	653,589,...
+	VRWL-1.1.0...	✓	Stopped	1,000,000,...	565,080	439,434	1,020,730	0	0	9	0	843,838,...
+	VRWL-1.1.0...	✓	None	1,000,000,...	3,658,228	4,054,215	69,677	0	0	0	0	782,190,...
+	VRWL-1.1.0...	✓	None	1,000,000,...	4,054,185	3,658,203	77,642	0	0	0	0	866,984,...
+	VRWL-1.1.0...	✓	None	44,736,000	18,593	18,613	85,816	0	0	0	0	3,980,56...
+	VRWL-1.1.0...	✓	None	44,736,000	18,632	18,612	85,849	0	0	0	0	3,988,51...

Logged in to: 192.168.100.138:4002 as: Admin

WanLink Display



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Create/Modify WanLink Window

VRWL-1.1.009 - Create/Modify WanLink

+

-

All

Apply

OK

Display WanLink & WanPaths

Cancel

1

WanLink Information

Name:

VRWL-1.1.009

Presets:

CUSTOM

Port:

Endpoint A

25 (oddVR14b)

Endpoint B

27 (oddVR15b)

Transfer Rate:

Endpoint A

f1 (1.544 Mbps)

Endpoint B

f1 (1.544 Mbps)

Delay:

Endpoint A

zero (0 us)

Endpoint B

zero (0 us)

Drop-Freq:

Endpoint A

zero (0%)

Endpoint B

zero (0%)

Jitter:

Endpoint A

zero (0 us)

Endpoint B

zero (0 us)

Jitter-Freq:

Endpoint A

zero (0%)

Endpoint B

zero (0%)

2

WanLink Information

☐ Pass-Through
☐ HW Pass-Through

☐ Coupled-Mode
☐ Kernel-Mode

Resource:

1 (ec2010-ath9k-1)

Rpt Timer:

fast (1 s)

Reorder-Freq:

Endpoint A

zero (0%)

Endpoint B

zero (0%)

Dup-Freq:

Endpoint A

zero (0%)

Endpoint B

zero (0%)

Drop Burst:

Endpoint A

min

1

max

1

Endpoint B

min

1

max

1

Reorder Amt:

Endpoint A

min

1

max

20

Endpoint B

min

1

max

20

Script

Script

3

Endpoint A WAN Paths

Create-WP

Modify-WP

Delete-WP

Name	Tx Rate	Disabled	!	Filter Pattern	Delay
wp1	1.544 M	<input type="checkbox"/>	<input type="checkbox"/>	Src: 0.0.0.0/0 Dest: 0.0.0.0/0	50

Endpoint B WAN Paths

Create-WP

Modify-WP

Delete-WP

Name	Tx Rate	Disabled	!	Filter Pattern	Delay
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4

WanLink Information

CPU-ID:

0

Replay File:

Endpoint A

☐ ICEcap Replay

Dir

☒ Loop Replay
☒ Replay Latency
☒ Replay Loss
☒ Replay Dup
☒ Replay Bandwidth

Endpoint B

☐ ICEcap Replay

Dir

☒ Loop Replay
☒ Replay Latency
☒ Replay Loss
☒ Replay Dup
☒ Replay Bandwidth

Test Manager:

default_tm

Dump File:

Endpoint A

☐ Dump Packets

☐ Force Packet Gap
☐ Drop-Xth
☐ Reorder-Xth

Endpoint B

☐ Dump Packets

☐ Force Packet Gap
☐ Drop-Xth
☐ Reorder-Xth

QDisc:

FIFO

Max Lateness:

AUTO

Backlog Buffer:

AUTO

Corruption: 1

Rate:

0

Corruption:

Random Write

Byte-to-Write:

0

Range Offset

min

0

max

0

☐ Chain-to-Next
☐ Checksum

Corruption: 4

Rate:

0

Corruption:

Random Write

Byte-to-Write:

0

Range Offset

min

0

max

0

☐ Chain-to-Next
☐ Checksum

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Software Features

- General purpose WAN and Network impairment emulator.
- Able to simulate DS1, DS3, DSL, CableModem, Satellite links and other rate-limited networks, from 10bps up to 45Mbps (full duplex).
- Can modify various network attributes including: network-speed, latency, jitter, packet-loss, packet-reordering, and packet-duplication.
- Supports Packet corruptions, including bit-flips, bit-transposes and byte-overwrites.
- Supports WanPath feature to allow configuration of specific behavior between different IP subnets, MAC addresses or other packet filters using a single pair of physical interfaces. WanPath support may

require purchase of additional WanPath licenses, please ask your sales contact for more information.

6. Supports routed and bridged mode for more flexibility in how you configure your network and LANforge-ICE.
7. Supports WAN emulation across virtual 802.1Q VLAN interfaces more efficient use of limited physical network interfaces.
8. Supports 'WAN-Playback' allowing one to capture the characteristics of a live WAN and later have LANforge-ICE emulate those captured characteristics. The playback file is in XML format, and can be easily created by hand or with scripts. The free LANforge-ICEcap tool can be used to probe networks and automatically create the XML playback file.
9. Allows packet sniffing and network protocol decoding with the integrated **Wireshark** protocol sniffer.
10. Includes comprehensive management information detailing all aspects of the LANforge system including processor statistics, test cases, and Ethernet port statistics.
11. GUI runs as Java application on Linux, MAC and Microsoft Operating Systems (among others).
12. GUI can run remotely, even over low-bandwidth links to accommodate the needs of the users.
13. Central management application can manage multiple units, tests, and testers simultaneously.
14. Includes easy built-in scripting to automatically iterate through bandwidth, latency and other settings. Advanced programmatic scripting over a TCP socket also supported and example perl libraries and scripts are included.
15. Automatic discovery of LANforge resources simplifies maintenance and configuration of LANforge test equipment.

Hardware Specification

1. Midrange Appliance with no moving parts.
2. Operating System: 64-bit Fedora Linux with customized Linux kernel.
3. 6 Gbps Ethernet ports.
4. 1.74 GHz Quad Core Intel Atom C2518 processor.
5. RJ45 Serial console (115200 8 N 1) for console management & initial configuration.
6. 4 GB RAM.
7. 30+ GB Solid State Hard Drive.
8. Larger storage drive available.
9. +12v 5AMP external power supply (brick).
10. Weight: 3.3 lbs or 1.5 kg.
11. Dimensions: 7 x 6 x 1.75 inches Metric: 180 x 145 x 45 mm.
12. Operating Temperature: 0 ~ 40°C.
13. Operating Humidity: 5 ~ 95%.
14. Certification: CE Emission, FCC Class A, RoHS Compliant.

Additional Feature Upgrades

Unless otherwise noted in the product description, these features usually cost extra:

- WanPaths (LANforge-ICE feature set)
- Virtual Interfaces: MAC-VLANs, 802.1Q VLANs, WiFi stations, etc
- LANforge FIRE traffic generation.
- VOIP: Each concurrent call over the included package requires a license.
- **VoIP-Mobile Audio Quality Testing using POLQA/PESQ.**

- Mobile-Mobile Audio Quality Testing using POLQA/PESQ.
- Armageddon: Each pair of ports requires a license if not already included.
- RF Chambers for WiFi testing.
- External battery pack: 12+ hours for CT520, CT523, CT92X and other platforms.

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