

## CT900 LANforge-ICE 45 Mbps WAN Emulator

The CT900 is an economical choice for a portable laptop-computer based network emulator supporting speeds up to 45 Mbps (bi-directional). The CT900 is an economy model laptop (specific brand depends on what is easily available at our suppliers). The laptop will contain one built-in wired ethernet interface, and a second wired interface will be a card-bus NIC. All management will usually be done locally on the laptop since there may not be a third interface for management. However, a USB network adapter can provide management access if necessary.

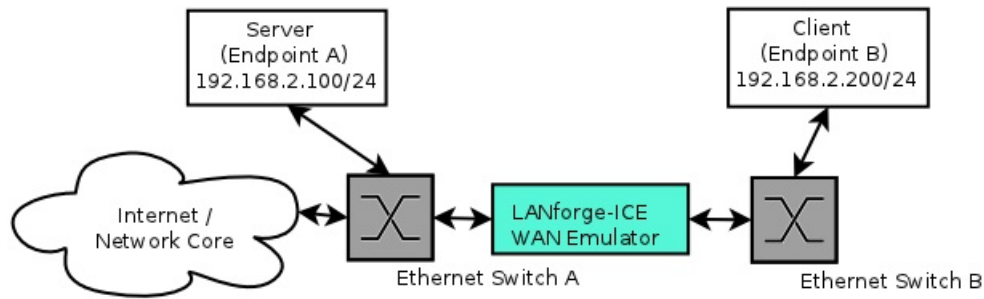


NOTE: This product may have a different hardware configuration than the system pictured above.  
Refer to your official quote for details.

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## Example Network Diagram



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. LANforge can also act as a router if desired.

## Quick Start Guide

1. Connect Client to one WAN emulation port and Server to the other. The two interfaces will be bridged and this bridge will inject the network emulation.
2. Connect laptop power plug to a standard US or European AC power source.
3. The CT900 should now boot.
4. Start the LANforge-GUI, and click 'Connect' to the default 'localhost:4002'.
5. 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'.

## LANforge-ICE Related Screen Shots

### WanLinks Tab

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  
 Hide Stopped

Select All Start Switch Stop Clear  
 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	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	Run	VRWL-1.1.002-A ...	18,632	18,593	44,736,000	44,736,000	1,00
VRWL-1.1.003	6.4	<input checked="" type="checkbox"/>	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...	<input checked="" type="checkbox"/>	Stopped	1,000,000,...	439,422	565,088	1,014,228	0	0	0	0	653,589,...
+	VRWL-1.1.0...	<input checked="" type="checkbox"/>	Stopped	1,000,000,...	565,080	439,434	1,020,730	0	0	9	0	843,838,...
+	VRWL-1.1.0...	<input checked="" type="checkbox"/>	None	1,000,000,...	3,658,228	4,054,215	69,677	0	0	0	0	782,190,...
+	VRWL-1.1.0...	<input checked="" type="checkbox"/>	None	1,000,000,...	4,054,185	3,658,203	77,642	0	0	0	0	866,984,...
+	VRWL-1.1.0...	<input checked="" type="checkbox"/>	None	44,736,000	18,593	18,613	85,816	0	0	0	0	3,980,56...
+	VRWL-1.1.0...	<input checked="" type="checkbox"/>	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

**WanLink Display: VRWL-1.1.000 Manager: brent-6port**

**Endpoint: VRWL-1.1.000-A (1.1.9.65)**

30-sec Averages

WAN Speed: 128 Kbps    TX Rate: 128.124 Kbps  
RX Rate: 130.572 Kbps    TX Pkts: 981  
Dropped: 0    Duplicated: 0  
Reordered: 0    TX Failed: 0

Rx Throughput [Recorded]

Rx Bytes Dropped [Record-Dropped]

129 KB Backlog

**Endpoint: VRWL-1.1.000-B (1.1.11.66)**

30-sec Averages

WAN Speed: 128 Kbps    TX Rate: 127.734 Kbps  
RX Rate: 140.298 Kbps    TX Pkts: 1100  
Dropped: 0    Duplicated: 0  
Reordered: 0    TX Failed: 0

Rx Throughput [Recorded]

Rx Bytes Dropped [Record-Dropped]

129 KB Backlog

**WanPaths for WanLink Endpoint: VRWL-1.1.000-A**

Name	Tx Rate	Disabled	!	!F	Filter Pattern	Tx Pkts	Rx Pkts	TX Bytes	RX Bytes	Dropped	Dup Pkts	OOO Pkts	Co

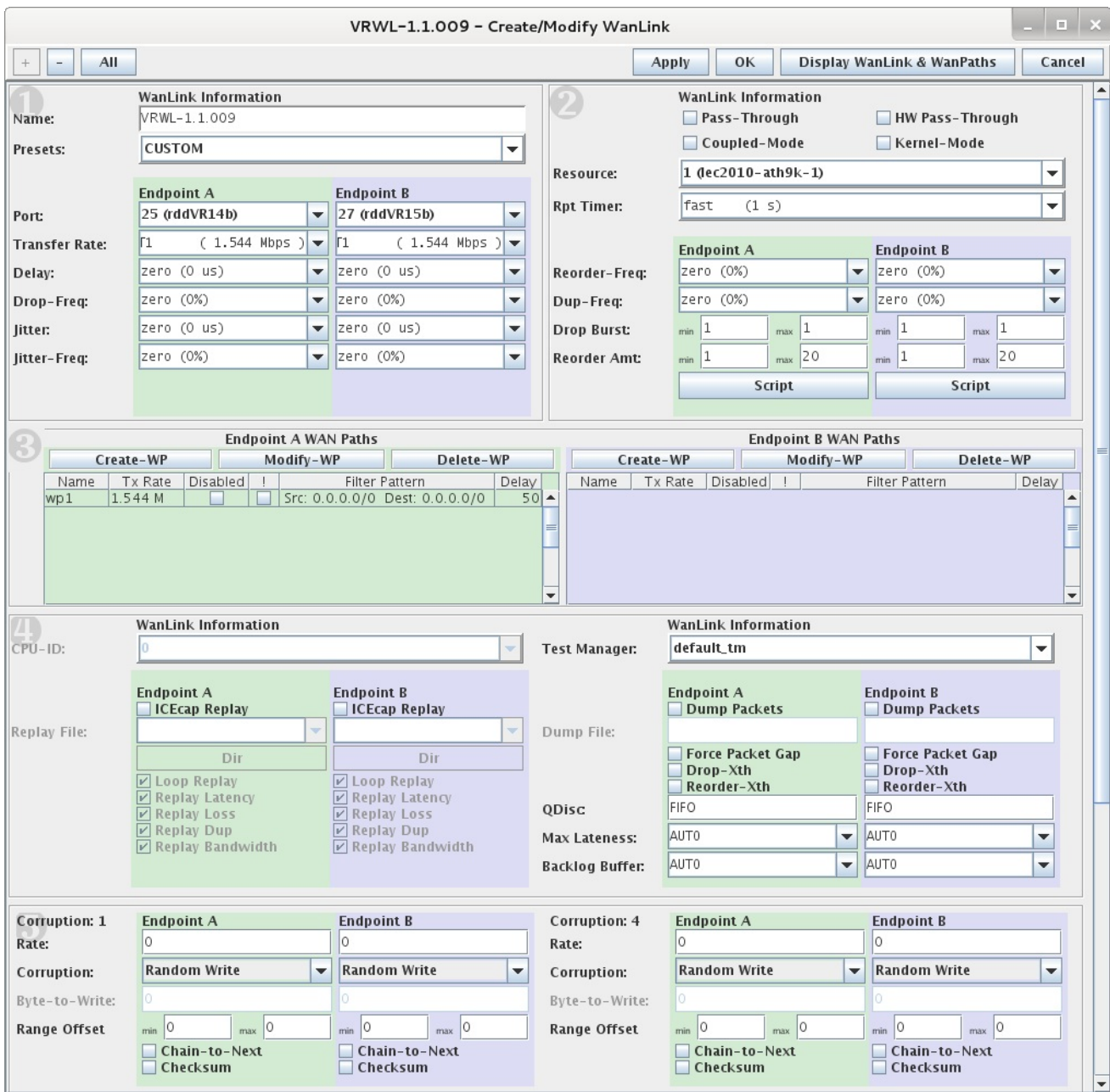
**WanPaths for WanLink Endpoint: VRWL-1.1.000-B**

Name	Tx Rate	Disabled	!	!F	Filter Pattern	Tx Pkts	Rx Pkts	TX Bytes	RX Bytes	Dropped	Dup Pkts	OOO Pkts	Co

Display Selected Paths
 Pause Display
Print
Modify
Stop
Refresh
Clear
Close

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## Create/Modify WanLink Window



## Software Features

1. General purpose WAN and Network impairment emulator.
2. Able to simulate DS1, DS3, DSL, CableModem, Satellite links and other rate-limited networks, from 10 bps up to 45 Mbps (full duplex).
3. Can modify various network attributes including: network-speed, latency, jitter, packet-loss, packet-reordering, and packet-duplication.

4. Supports Packet corruptions, including bit-flips, bit-transposes and byte-overwrites.
5. 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, Solaris 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 programatic 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. Economy laptop system (for example, the Lenovo E520).
2. Operating System: Fedora Linux with customized Linux kernel.
3. 1 built-in wired Ethernet interface, one card-bus wired Ethernet interface adapter.
4. Intel i3 processor or higher.
5. 2 GB RAM or more.
6. 40 GB or larger Hard Drive.
7. Solid State Drive option available.
8. Weight varies, estimated at around 6 lbs or less (approximately 2.7 kg).
9. Dimensions: Standard laptop form factor.

List Price: \$6,290    List Price with 1 Year support (17%): \$7,359

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## 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.
- Armageddon: Each pair of ports requires a license if not already included.
- External battery pack: 12+ hours for CT521, CT523, CT919, CT92X platforms. Ask for others.

