



# Valkyrie2544™

## Standalone RFC2544 application

Xena Valkyrie2544 is a free PC application developed by Xena Networks for testing throughput, latency, loss, and burst performance as defined by the IEEE RFC 2544 methodology.

In addition to full support for all of the configuration and performance test types described in RFC 2544, Valkyrie2544 offers a number of powerful functional extensions.

Using the same terminology as RFC 2544, Valkyrie2544 features a simple intuitive GUI that makes it easy to create, edit and execute test configurations for Layer 2 and Layer 3 on one or more ValkyrieCompact and/or ValkyrieBay chassis.

Different network topologies and traffic flow directions can be defined, and protocol layers can be MAC only, VLAN, Q-in-Q, MPLS, IPv4, IPv6, and UDP.

Test reports can be generated in both PDF and XML format and extensive configuration options are available for fine-tuning the tests.

### Include Valkyrie2544 in automated scripting environments

Valkyrie2544 is ideal for interactive sessions, and the companion Valkyrie2544Run utility makes it easy to perform RFC2544 testing from fully-automated scripting environments.

The Valkyrie2544Run utility lets you execute any test configuration created by Valkyrie2544 from the command line. Note that this utility is only capable of executing a Valkyrie2544 generated test configuration, so the test configuration must still be created with Valkyrie2544. The CLI of Valkyrie2544 (v. 2.32 and newer) is also supported under Linux using the Mono framework. This lets you execute existing Valkyrie2544 configurations in a Linux console\* and obtain test reports.

Test reports can be created in either PDF or XML format or both. The XML report contains both a test results and a test configuration section. The results section will contain the actual results, whereas the configuration section contains the full configuration used to perform the test.

Scripting examples showing how easy it is to launch Valkyrie2544 from any scripting language using Valkyrie2544Run, are available via Xena's website, as well as examples showing how the XML result file can be parsed and the results extracted.

### Multi-stream Testing

Valkyrie2544 supports both single stream and multi-stream testing. Multi-stream testing lets test engineers manage the values of address fields in the protocol headers to emulate many more clients than the physical port count allows.

Using the Multi-Stream Configuration tab, Valkyrie2544 lets you generate multiple streams between any two port pairs with the source and destination addresses in the streams defined by easy-to-configure parameters.



### Top Features

- All RFC 2544 tests over VLAN, Q-in-Q, IPv4, IPv6, UDP, and MPLS protocols
- Large port count and full mesh tests, uni-directional or bi-directional testing
- Easy point-to-point, point-to-multipoint, and multipoint-to-point testing
- Support for multi-stream testing
- Multiple powerful functional extensions to the standard RFC 2544 functions
- Reduce time-to-test through easy GUI configuration
- Summary and result reports in PDF and XML formats
- Easy execution and results parsing from automated scripting environments
- Linux console with Mono Framework
- User-friendly GUI makes Valkyrie2544 simple to learn and easy to use.
- Free software (included with all Xena test equipment)

The screenshot shows the Valkyrie2544 v4 GUI. The main window displays the 'Xena 2544' logo and a configuration screen for a 'Back-to-Back' test. The configuration includes a network diagram showing traffic flow from WEST to EAST. The 'Settings for test-type "Back-to-Back"' window is open, showing parameters like Duration (3 seconds), Iterations (1), Initial Rate (50.00%), Step Rate (50.00%), and Max. Rate (100.00%). The 'Test Results' table shows the following data:

Frame Size	Iteration #	Rate Tested (%)	Tx (Packets)	Rx (Packets)	Total Burst (Packets)	Total Loss (Packets)	Accepted	P-0-02 Burst Size	P-0-03 Burst Size	P-0-70 Burst Size	P-0-71 Burst Size
64	1	50	4	0	4	4	No	1	1	1	1
64	1	100	4	0	4	4	No	1	1	1	1
128	1	50	4	0	4	4	No	1	1	1	1
128	1	100	4	0	4	4	No	1	1	1	1
256	1	50	4	0	4	4	No	1	1	1	1
256	1	100	4	0	4	4	No	1	1	1	1
512	1	50	4	0	4	4	No	1	1	1	1
512	1	100	352 444	0	352 444	352 444	No	88 111	88 111	88 111	88 111

The status bar at the bottom indicates: Ports: 4/4 (S/D), runs: 56. Back2back test: Testing 512 byte packets at 100.00% (iteration 1). User: Chris



## Specifications

RFC 2544	Features
Key Tests	<ul style="list-style-type: none"> <li>Throughput</li> <li>Latency (FIFO, and LIFO) and Jitter</li> <li>Frame loss</li> <li>Back-to-back frames</li> </ul>
Traffic Control	<ul style="list-style-type: none"> <li>Ethernet, VLAN, Q-in-Q, MPLS, IPv4 and IPv6 frame support</li> <li>Custom field setting for any protocol</li> <li>Forwarding, including throughput and forwarding rates with a 16ns resolution</li> <li>Configurable maximum test rates</li> <li>Native and public IP addressing for NAT and firewall testing</li> </ul>
Learning Parameters	<ul style="list-style-type: none"> <li>Automatic learning packets for both Layer 2 and 3</li> <li>Repeat count</li> <li>Per test, per trial and per frame size learning</li> </ul>
Test Topologies	<ul style="list-style-type: none"> <li>Full mesh</li> <li>Point-2-Point, Point-2-MultiPoint, MultiPoint-2-Point</li> <li>Multi-port pair definitions, East/West</li> <li>Uni-directional or Bi-directional testing</li> <li>Testing between any combinations of port-speeds</li> </ul>
Large Mesh Test Port Matrix	<ul style="list-style-type: none"> <li>Layer 2 – Up to 320 ports for 1G ports, up to 1000 ports for 10G ports, up to 320 ports for 40/100G ports</li> <li>Layer 3* – Up to 32 ports for 1G ports, up to 256 ports for 10G ports, up to 64 ports for 40/100G ports (*Latency/jitter results may not be available for small packets - such as 64 bytes - in certain L3 packet header types)</li> </ul>
Reporting	<ul style="list-style-type: none"> <li>Reports are available in PDF and .xml format</li> </ul>

The **Throughput** test determines the maximum rate at which the DUT receives and forwards frames without any frame loss. Frames are initially sent at a user-specified rate and a binary search algorithm is used to obtain a rate at which the DUT does not lose frames. Results include throughput rates in frames per second obtained for each frame size.

The **Latency** test determines the latency of the DUT. In the Latency test, frames are transmitted for a fixed duration. Frames are transmitted and tagged with timestamps. Latency is calculated by subtracting the transmit timestamp from the receive timestamp. Results include latencies for each frame size and the average, minimum, and maximum latencies for all the trials.

The **Frame Loss** Test determines how many frames the DUT loses at various frame rates. The number of frames to transmit is specified along with the initial transmit rate, and the percentage decrease in the frame rate for each iteration. Results include frame loss at various rates for each frame size.


The **Back to Back** Test determines the maximum time that the DUT can receive and forward without frame loss. Frames are sent at a user-specified rate, generally the maximum theoretical rate based on the speed of the port. The results of the test show the number of back-to-back frames obtained for each frame size and the average and total back-to-back frames for all the trials. Results include total back-to-back frames without loss for each frame size.

\*Valkyrie2544 has been tested under Fedora Workstation v. 22 with Mono version 4.0.3 SR3 (4.0.3.20).



Xena Networks is an award-winning manufacturer of advanced Gigabit Ethernet test and measurement solutions.

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