



Lab Testing Summary Report

January 2014

Report 140109

Product Category:

Network Analysis and Recorder Appliance

Vendor Tested:



Product Tested:

Omnipliance TL



Key findings and conclusions:

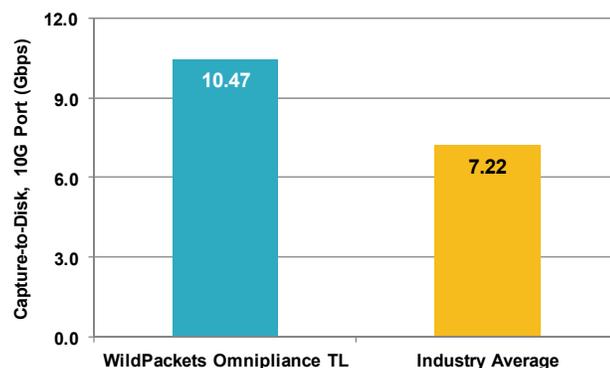
- Omnipliance TL network analysis appliance with two-port OmniAdapter 10G card proves in testing a capture-to-disk rate of 20.94 Gbps with no packet loss
- Capture-to-disk rate per 10G port, 10.47, is the highest observed to date in testing of network analysis and recording appliances
- Using an OmniAdapter 40G card, the capture-to-disk rate was measured in testing at a rate of 25.33 Gbps with no loss in storing the data
- Provides analysis with full display of real-time statistics without impeding capture-to-disk performance

WildPackets engaged Miercom to conduct comprehensive, hands-on performance testing of the Omnipliance TL network analysis and recorder appliance. Maximum capture-to-disk rate was validated for the Omnipliance TL equipped with two different network analysis cards: a two-port OmniAdapter 10G and a one-port OmniAdapter 40G.

Additional tests using the 40G card were conducted to evaluate the impact of displaying real-time capture-to-disk statistics on capture-to-disk rate and CPU utilization. Another test recorded the impact on capture-to-disk rate when simultaneously displaying real-time statistics and downloading a PCAP file.

Announced by WildPackets in November 2013, the Omnipliance TL is a high-performance network analysis and recorder appliance for 10G and 40G network segments. Its deployment scenarios include data centers and network operations centers as well as on WAN links.

**Figure 1: Omnipliance TL Network Analysis and Recorder Appliance with Two-Port 10G OmniAdapter
Capture-to-Disk Rate per 10GE Port**



Source: Miercom Network Capture Appliance Study 2014

The Omnipliance TL equipped with a two-port 10G OmniAdapter exhibited the highest capture-to-disk rate per 10G port observed in testing to date. The rate, 10.47 Gbps, is 31% greater than the industry Average.

The Omnipliance TL conducts continuous (24x7) capture of network traffic. It also conducts rapid, in-depth searches for specific captured data and forensics analysis.

Using an interactive visualization format, the rapid search functionality enables network issues to be identified, analyzed, reconstructed and resolved quickly and efficiently. Thus, the need for costly, time-consuming troubleshooting by trying to reproduce intermittent network issues is eliminated.

Omnipliance TL also supports centralized, correlated analysis of network flows from multiple network data capture points using multi-segment analysis. Other data capture points include the Omnipliance MX and Omnipliance CX network analysis and recorder appliances as well as the OmniEngine Enterprise Probe network protocol analysis software.

The overall storage capacity available in testing was 128 TB. The Omnipliance TL had 64 TB of internal storage. An Omnistorage disk array provided an additional 64 TB of external storage.

Omnipliance TL is available with 32, 48 or 64 TB of storage capacity. WildPackets also has a new line of Omnistorage disk arrays that can double the storage capacity of the Omnipliance TL.

An Ixia XM12 generated identical unidirectional IMIX traffic for all tests, simulating traffic on a real-world network that consisted of small, medium, large and jumbo frames.

Capture-to-Disk Rate, Two-Port OmniAdapter 10G

The Omnipliance TL equipped with a two-port OmniAdapter 10G exhibited a maximum capture-to-disk rate of 20.94 Gbps with no frame loss.

The validated capture-to-disk rate of the Omnipliance TL per 10G port is the highest observed to date. A comparison of that rate, 10.47 Gbps, and the Industry Average is shown in [Figure 1 on page 1](#).

The number of frames generated by the Ixia XM12 was captured on IxExplorer software. That number was equal to the number of packets received and filtered by the Omnipliance TL as shown in [Figure 2](#) below, a screenshot from WildPackets OmniPeek network analyzer software residing on the Test Client, a Dell 6430u laptop. The OmniPeek traffic monitoring utility verified the same line-rate, no packets dropped finding as indicated with our test and measurement equipment.

Capture-to-Disk Rate, One-Port OmniAdapter 40G

The Omnipliance TL equipped with a one-port OmniAdapter 40G had a maximum capture-to-disk rate of 25.33 Gbps with no frame loss. The validated capture-to-disk rate per 40G port is the highest observed to date. A comparison of the capture-to-disk performance to the Industry Average is shown in [Figure 3 on page 3](#).

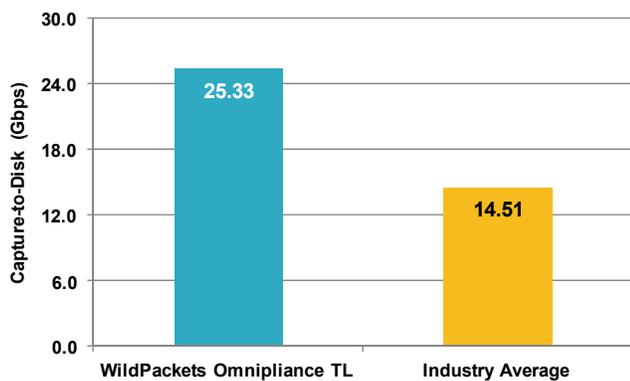
Figure 2: Omnipliance TL Network Analysis and Recorder Appliance with Two-Port 10G OmniAdapter
OmniPeek: All Packets Received and Filtered, No Packets Dropped

Capture	Comment	Status	Adapter	Packets Received	Packets Filtered	Packets Dropped	Start Time	Duration	Alarms	Owner
MyCapture2013-12-17		Idle	OmniAdapter 10G - 1	733,545,796	733,545,796	0	12/17/2013 13:29:51	0:10:52		root

Source: Miercom Network Capture Appliance Study 2014

The Omnipliance TL equipped with a two-port 10G OmniAdapter received and filtered all packets generated by the Ixia XM12. OmniPeek network analyzer display also shows 0 packets dropped.

Figure 3: Omnipliance TL with One-Port 40G OmniAdapter Capture-to-Disk Rate



Source: Miercom Network Capture Appliance Study 2014

The Omnipliance TL with a one-port 40G OmniAdapter exhibited the highest capture-to-disk rate per 40G port observed to date, 25.33 Gbps.

WildPackets is the first vendor to provide a network data capture and analysis appliance with a 40G card for testing. Other products we have tested were limited to 10GE interfaces. The Industry Average used in this comparison is based on 4x10 interfaces since no other vendors have stepped forward to date to have us test a solution directly comparable to the Omnipliance TL equipped with the one-port OmniAdapter 40G.

The Ixia XM12 generated 996,015,945 frames of IMIX traffic as shown in Figure 4, a screenshot from IxExplorer. OmniPeek recorded 996,015,945 packets received and the same number of packets filtered with 0 packets dropped for the Omnipliance TL.

Impact of Displaying Real-time Statistics on Capture-to-Disk Rate

In order to keep an enterprise network performing optimally, continuous monitoring as well as immediate detection and troubleshooting of problems is necessary. Omnipliance TL enables immediate detection and troubleshooting by displaying key network and media statistics in real time.

This test evaluated the impact of displaying real-time statistics on the capture-to-disk rate.

With the Forensics Dashboard enabled, the Omnipliance TL equipped with a one-port 40G OmniAdapter exhibited a maximum capture-to-disk rate of 21.06 Gbps as shown in Figure 5 on page 4.

There was no significant performance impact to running real-time statistics gathering utilities while simultaneously capturing line-rate traffic.

Impact of Displaying Real-time Statistics on CPU Utilization

This test evaluated the impact on CPU utilization of displaying the same real-time statistics as in the prior test, a timeline of the Omnipliance TL capturing test traffic to disk.

The Omnipliance TL equipped with a one-port 40G OmniAdapter handled capture-to-disk without any issues with memory available. Just under 10% of RAM and 0.0% of SWAP was utilized. These

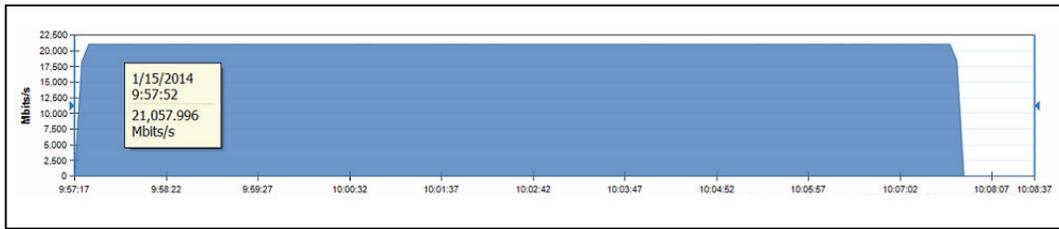
Figure 4: Omnipliance TL Appliance with One-Port 40G OmniAdapter Frames Sent by Ixia XM12

	A	B
1	Name	172.21.46.138:02:04
2	Link State	Link Up
3	Line Speed	40GE
4	Frames Sent	996,015,945
5	Frames Sent Rate	0
6	Valid Frames Received	0
7	Valid Frames Received Rate	0
8	Bytes Sent	2,127,281,969,452
9	Bytes Sent Rate	0
10	Bytes Received	0
11	Bytes Received Rate	0
12	Fragments	0
13	Undersize	0
14	Oversize and Good CRCs	0
15	CRC Errors	0
16	Vlan Tagged Frames	0
17	Flow Control Frames Received	0
18	Oversize and CRC Errors	0
19	User Defined Stat 1	0
20	User Defined Stat 2	0
21	Capture Trigger (UDS 3)	0
22	Capture Filter (UDS 4)	0
23	User Defined Stat 5	0
24	User Defined Stat 6	0

Source: Miercom Network Capture Appliance Study 2014

Ixia's IxExplorer shows the number of frames sent by Ixia XM12 to the Omnipliance TL with one-port 40G OmniAdapter in the capture-to-disk rate test.

Figure 5: Omnipliance TL Network Analysis and Recorder Appliance with One-Port 40G OmniAdapter Capture-to-Disk Rate with Real-time Statistics Displayed



Source: Miercom Network Capture Appliance Study 2014

OmniPeek Analyzer verifies a maximum capture-to-disk rate of 21.06 Gbps for Omnipliance TL with a one-port 40G OmniAdapter handling 21 Gbps of IMIX test traffic while displaying a real-time timeline of capture-to-disk statistics.

figures are in *Figure 6*, which shows the command line interface of the Omnipliance TL.

The RAM and SWAP statistics are shown in the top quadrant and include “used” and “free.” See the items circled in red. The utilization statistics show that even when capturing 21 GB of traffic with real-time network statistics running, the CPU usage was taxed only 79% and the system had ample available memory resources for other processes.

Additional statistics in the top quadrant of the screenshot verified that capture-to-disk proceeded without issue. The three values for load average are under 1.0. This indicates

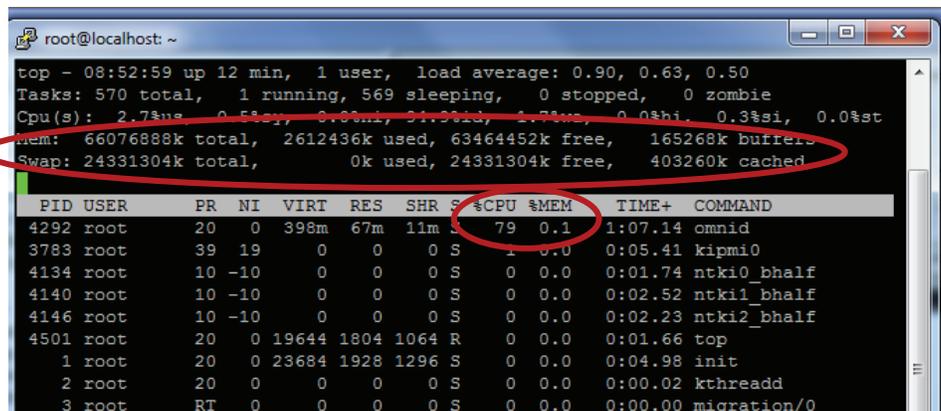
normal operations with the CPU staying ahead of incoming traffic.

Impact of Displaying Real-time Network Statistics and Successfully Downloading a PCAP File on Capture-to-Disk Rate

Using the Ixia XM12 to generate 21 Gbps of unidirectional IMIX traffic, we evaluated the impact on the capture-to-disk rate of the Omnipliance TL with one-port 40G OmniAdapter of simultaneously displaying real-time network statistics while downloading a PCAP file.

CPU performance and available memory of the Omnipliance TL with one-port 40G OmniAdapter handled 21 Gbps of test traffic with real-time network statistics displayed without issue. Maximum CPU utilization was 79%. Also, just under 10% and 0.0% of RAM and SWAP were utilized, respectively.

Figure 6: Omnipliance TL Network Data Capture and Analysis Appliance with One-Port 40G OmniAdapter Network Resource Utilization with 21 Gbps of Traffic and Running Real-time Network Statistics



Source: Miercom Network Capture Appliance Study 2014

The capture-to-disk rate was not impacted by the combination of displaying real-time network statistics and downloading a PCAP file of 4096 MB.

In *Figure 7*, OmniPeek shows the download of the PCAP file is approximately 90% complete. Upon completion of the download, it was verified that no data had been lost or corrupted.

Bottom Line

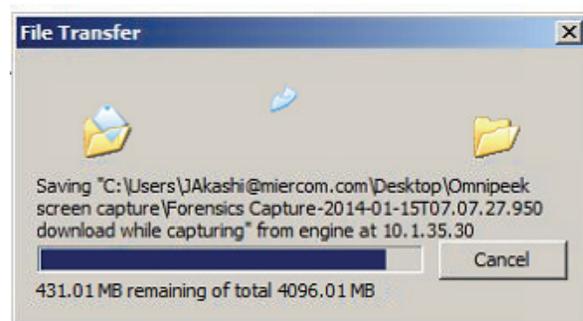
The Omnipliance TL network analysis and recorder appliance from WildPackets is breaking new ground by proving line-rate performance for 10GE interfaces. Also proven in testing, WildPackets demonstrated the highest capture-to-disk rate using 40GE interfaces compared to competitive offerings for network capture-to-disk appliances on the market.

In order to achieve the industry's fastest capture-to-disk performance observed to date in testing for both 10G and 40G, the Omnipliance TL was attached to a high performance Omnistorage disk array. Omnipliance TL is currently in the lead in terms of being the highest performance, but also priced at a competitive advantage which allows it also to be the best price/performance network analysis and recorder appliance currently available in the market.

At the time of this writing and testing, Omnipliance TL was one of a small number of network data capture and analysis appliances known to us that is designed for 40G networks segments.

We were impressed with the performance of the Omnipliance TL. It achieved line-rate capture-to-disk when equipped with a two-port 10G OmniAdapter.

Figure 7: Omnipliance TL Appliance with One-Port 40G OmniAdapter Data Integrity Verification Test with 40GB File



Source: Miercom Network Capture Appliance Study 2014

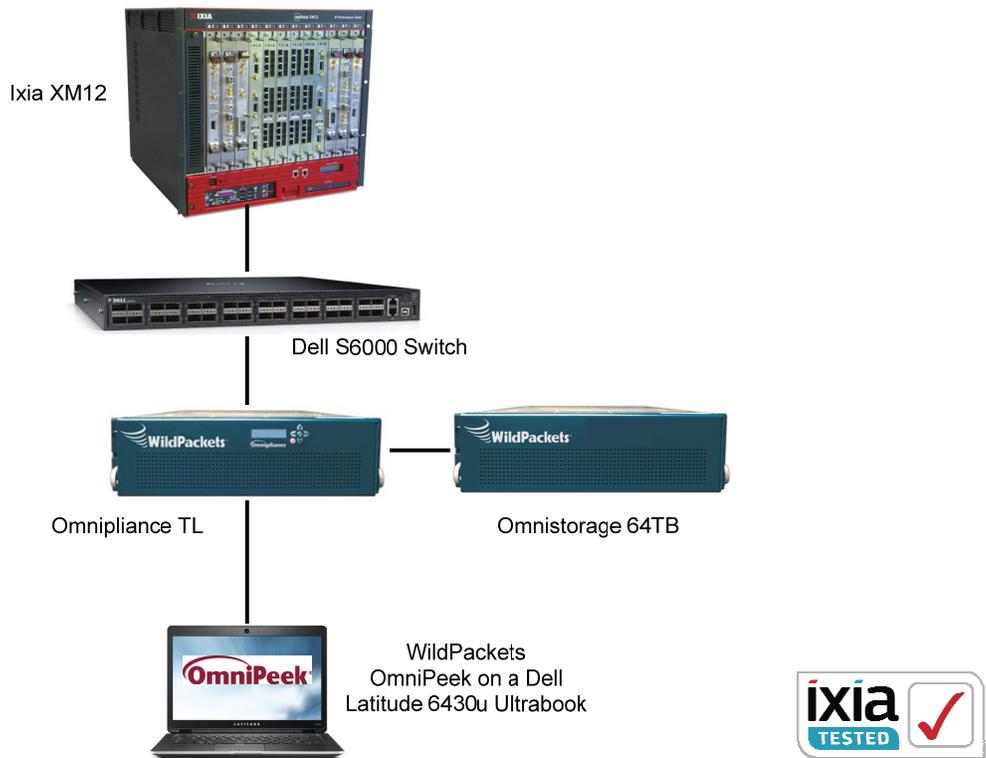
Capture-to-disk performance of the Omnipliance TL with a one-port 40G OmniAdapter was not significantly impacted by handling 21 Gbps of test traffic while simultaneously displaying real-time capture-to-disk statistics and downloading a PCAP file. The graphic from the CLI of the Omnipliance TL shows that approximately 90% of the PCAP file has been downloaded. Upon completion of the download, it was confirmed that no data had been lost or corrupted.

Additionally, testing verified that the capture-to-disk performance of Omnipliance TL with one-port OmniAdapter 40G was not impacted significantly by enabling real-time statistics.

The Omnipliance TL is well-suited for its designed role in 10G and 40G networks segments, such as data centers and network operations centers as well as on WAN links.

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Test Bed Diagram



How We Did It

Unidirectional IMIX traffic generated by the Ixia XM12 that simulated real-world network traffic was sent to the Omnipliance TL for capture to disk in all tests. The traffic was comprised of 67% small and medium frames, 512 bytes or less. 33% of the traffic was jumbo frames, 4096 and 6144 bytes.

Ixia XM12 is a comprehensive Layer 2-7 solution for performance, functional and conformance testing of network equipment and network applications. The 12-slot chassis supports up to 192 GE ports: 96 10GE, 6 40 or 100 Gigabit Higher Speed Ethernet CFP MSA, 12 40 GE QSFP+ ports 24 packet over SONET (POS) or 24 asynchronous transfer mode (ATM).

Each test consisted of multiple runs to verify the result. Each run lasted a minimum of 10 minutes.

The amount of traffic generated for capture-to-disk testing with no functionality enabled was 21 Gbps for the Omnipliance TL equipped with the two-port 10G OmniAdapter and 25 Gbps for the one-port 40 GB OmniAdapter. The amount of traffic generated for each of the additional tests with the one-port 40G OmniAdapter that evaluated the impact on capture-to-disk rate of enabling functionality was 21 Gbps.

WildPackets OmniPeek network analyzer software housed on the test client, a Dell 6430u laptop, monitored test results.

The Omnipliance TL network analysis and recorder appliance tested had the latest WildPackets' software installed, 7.9.1, as well as 64TB of internal storage. It was linked to an Omnistorage array with 64TB of storage.

A Dell S6000 10/40 served as the test bed switch. The Dell S6000 was ideal for inclusion due to its ability to function in both 10G and 40G network segments.

A Layer 2 and Layer 3 Top-of-Row/End-of-Rack Ethernet switch, the Dell S6000 is designed for real-world deployment scenarios that require high bandwidth and low latency. They include part of traditional Ethernet and Layer 2 fabrics for virtual data centers and aggregation switch serving mid-sized and large customers or handling high-frequency financial trading, Web 2.0, big data and other heavy workload operations.

The tests in this report are intended to be reproducible for customers who wish to recreate them with the appropriate test and measurement equipment. Contact Miercom Professional Services via reviews@miercom.com for assistance. Miercom recommends customers conduct their own needs analysis study and test specifically for the expected environment for product deployment before making a product selection. Miercom engineers are available to assist customers for their own custom analysis and specific product deployments on a consulting basis.

Miercom Performance Verified

Based on our comprehensive, hands-on testing, the WildPackets Omnipliance TL network analysis and recorder appliance is awarded Performance Verified for exhibiting the fastest 10G and 40G capture-to-disk rates observed in testing to date.

Equipped with a two-port 10G OmniAdapter, the Omnipliance TL recorded a capture-to-disk rate of 20.94 Gbps. This is the fastest capture-to-disk rate per 10G port observed to date, 10.47 Gbps.

In addition, the Omnipliance TL equipped with a one-port 40G OmniAdapter exhibited a capture-to-disk rate of 25.33 Gbps. This is the fastest 40G capture-to-disk rate observed to date.



**Omnipliance TL
Network Analysis and
Recorder Appliance**



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