Server U

RACK-MOUNT SERVERS

designed for BSD and Linux systems

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Server U

presents

SERVERU NETMAP L-800

datasheet & executive overview

SERVERU NETMAP L-800

ServerU Netmap L-800 is our best offer for an embedded network-centric appliance at High End class. This device was specially designed for mission-critical high-performance and high-availability operations on big and medium business.

Powered by default with 6 Intel Gigabit Server network cards – igb(4) device – with multiple multithreaded and independent queues, MSI-X interrupt control and ready for Netmap technology which provides high performance packet capturing and processing. With up to 16GB RAM (8GB default) and 8 Intel High End embedded processors w/ AES-NI support, it's a networking server suitable for up to **5.6Gbit/s** and **2.7Mpps** aggregate throughput and up to 18Mpps / 40Gbps accelerated performance in Netmap mode.

KEY FEATURES

- 6 NICs w/ Intel igb(4) driver w/ bypass
- Hand-picked server chipsets
- Netmap Ready (FreeBSD & pfSense)
- Up to 14x 1Gbit/s expansion ports
- Up to 4x10GbE SFP+ expansion
- 3 bypass segments (fail-safe)

PERFECT FOR

- BGP & OSPF routing
- Firewall & UTM Security Appliances
- IDS / IPS and Anti-DDos
- WAF (Web Application Firewall)
- CDN & Web Cache / Proxy
- E-mail Server & SMTP Filtering

DESIGNED WITH SECURITY IN MIND

- Defense in Depth: Perfect for bastion Host, Tier-1, Tier-2 and Tier-3 perimeter control
- Diversity of Defense: FreeBSD, Linux or OpenBSD; ProApps, pfSense or Mikrotik;
- Fail Safe: 3rd generation Intel Bypass technology (power or system failure)

Here is a summary description for this product:

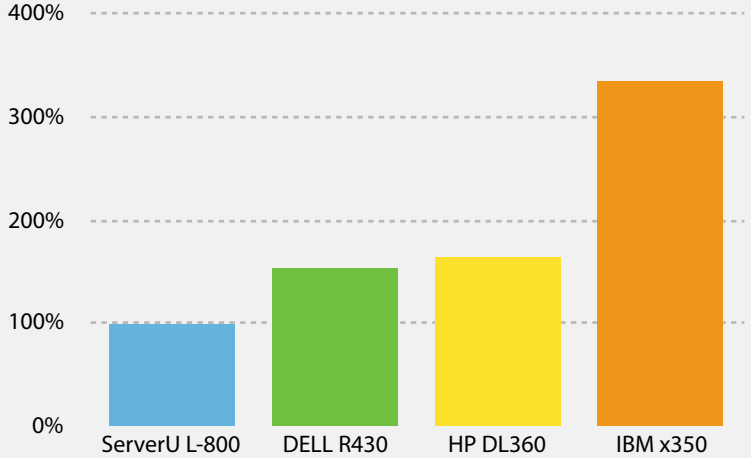
Designed for special purposes and systems.

Business Size:	For big and medium sized business;
Recommended use:	BGPv4 & OSPF Routing, Stateful Firewall, IDS/IPS, Web App Firewall, Anti-DDoS, NGFW;
Recommended use:	Web Proxy & Content Filtering, E-mail security & server, SMTP Firewall & VPN;
Designed for:	ProApps, FreeBSD, pfSense, OpenBSD, Linux, Vyatta (VyOS), Endian;
Certifications:	FCC Class A, UL, RoHS, CE Emission, ANATEL;

This is some spotlight technical information for **ServerU Netmap-L800**

Processor:	Intel® C2758 "Rangeley" 8x2.41Ghz (Octa Core) Embedded with AES-NI support;
Chipset:	Intel® "Rangeley" w/ VT-x virtualization support;
Memory Technology:	1x 8GB DDR3 on 240P DIMM socket (up to 16GB on 2x240P DDR3 DIMM);
Network Interfaces:	6x Intel Gigabit server ports w/ 2x i210AT chipset and 4x 88E1543 chipset - igb(4) driver;
Network Features:	All 3 segments with full 3rd gen bypass; WDT, RTC, MSI-X, CPU Affinity w/ 4 and 8 Qs;
Physical I/O:	4-key Pad & 2-line LCM Display (fully scriptable yeah!);
Power Source:	110v/220Vac default; 48Vdc optional; 72Vdc optional; 36Vdc optional;
Energy Usage:	40W;

TCO COMPARISON - SERVERU L800 VS DELL, HP AND IBM SIMILARS



VENDOR	UNIT VALUE
ServerU L-800	Current listing price
HP DL360	53% more expensive
DELL R430	63% more expensive
IBM X350	334% more expensive

IBM x350
HP DL360
DELL R430
ServerU L-800

Compared products won't include LCM, Keypad, Bypass, Intel NICs. ServerU provides a better feature set at a lower TCO.

** Prices based on online quotes from Apr '15.*

HIGH END PERFORMANCE COMPARABLE TO XEON SERVERS

ServerU Netmap L-800 is powered by a top of series "Rangeley" processor. With 8 cores CPU, built into a perfectly integrated low energy consumption and low heat dissipation appliance, the system offers performance rates similar to a Xeon server with the same processing clock while using half the energy and half heating rates.

When compared to Xeon L5520, this CPU class powering Netmap L-800 shows superior performance on almost all benchmarks published by specialized magazines and websites.

Here you can see the testing results published by ServeTheHome:

Benchmark Comparison						
Environment	Blowfish	Cryptohash	Fibonacci	N-Queens	FPU FFT	FPU Raytracing
Intel Xeon E3-1230 V3	1.55	952.13	1.20	0.46	0.73	3.24
AWS m3.2xlarge	1.93	684.08	1.86	0.57	1.05	3.90
Intel C2750	2.04	466.85	4.44	1.05	3.74	12.92
AMD Opteron 3380	2.06	817.96	2.62	0.59	1.43	25.33
Rackspace 30GB Dallas	2.49	604.87	3.11	0.97	2.09	19.52
Intel Xeon E3-1220 V3	2.58	652.20	1.17	3.46	0.72	4.10
Rackspace 15GB Dallas	3.29	456.39	3.11	0.97	2.10	18.93
AWS m3.xlarge	3.73	362.86	1.80	5.97	1.01	3.76
Intel Xeon L5520	3.82	308.51	4.71	1.50	2.49	5.52
AWS m1.xlarge	4.09	227.71	3.79	18.48	2.01	10.51
Rackspace 8GB Dallas	4.93	255.41	3.12	13.51	2.16	18.84
AWS m1.large	9.67	166.23	3.00	15.16	3.42	8.12
Rackspace 4GB Dallas	9.76	138.53	3.12	13.77	4.35	16.65
Rackspace 2GB Dallas	9.79	137.52	3.12	15.27	4.32	16.62
AWS t1.micro	13.07	106.07	2.92	8.17	11.27	36.62
AWS m1.medium	16.33	83.04	3.79	12.01	8.03	8.07
Rackspace 512MB Dallas	19.51	89.06	3.11	9.70	8.42	9.55
Rackspace 1GB Dallas	19.76	89.32	3.11	9.68	8.43	9.67
Intel Atom S1260	24.12	41.04	22.99	66.48	22.01	54.30
AWS m1.small	32.72	41.29	7.57	24.09	16.20	16.17
Raspberry Pi	85.21	10.60	22.50	74.00	128.53	111.37
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Benchmark Comparison												
Environment	UnixBench 5.1.3 (multi)	Dhrystone 2 using register variables (lps)	Double-Precision Whetstone (MWIPS)	Execl Throughput (lps)	Pipe Throughput (lps)	Pipe-based Context Switching (lps)	Process Creation (lps)	Shell Scripts (1 concurrent) (lpm)	Shell Scripts (16 concurrent) (lpm)	Shell Scripts (8 concurrent) (lpm)	System Call Overhead (lps)
Intel Xeon E3-1230 V3	8,498.1	174,251,198	29,475	30,186	12,167,598	2,089,036	98,418	57,990	3,922	7,835	8,661,106
Intel Xeon E3-1220 V3	6,824.2	158,907,562	17,147	20,969	9,947,506	1,685,655	78,880	40,010	2,850	5,697	12,304,807
Intel C2750	4,439.3	101,772,183	18,824	13,276	7,834,819	1,071,356	38,190	25,581	1,794	3,564	5,949,163
Intel Xeon L5520	3,928.9	67,751,142	13,706	13,759	5,535,921	873,673	40,986	24,651	1,630	3,258	7,241,884
AMD Opteron 3380	3,884.0	119,721,053	22,162	16,950	5,585,877	918,333	44,191	38,385	2,255	4,503	866,640
AWS m3.2xlarge	2,370.0	139,760,264	25,432	5,931	2,250,117	358,725	11,717	14,957	997	1,998	2,613,493
Rackspace 30GB Dallas	1,934.1	149,252,994	19,768	4,554	2,028,332	331,246	8,853	11,305	762	1,522	1,819,157
Rackspace 15GB Dallas	1,503.1	111,558,164	14,907	3,653	1,540,296	249,277	7,224	8,984	604	1,207	1,415,867
AWS m1.xlarge	1,285.7	80,470,322	9,953	3,332	1,383,302	212,221	6,657	8,175	554	1,105	1,345,757
AWS m3.xlarge	1,276.7	72,387,447	13,169	3,325	1,146,302	187,749	6,805	8,506	576	1,151	1,309,664
Rackspace 8GB Dallas	1,052.5	74,288,423	9,930	2,651	1,035,207	169,211	5,474	6,455	436	871	992,595
AWS m1.large	609.1	40,994,533	4,513	1,640	597,239	95,523	3,413	3,998	269	538	599,655
Rackspace 2GB Dallas	548.9	37,137,208	4,976	1,453	510,802	84,424	3,090	3,552	239	477	492,924
Rackspace 4GB Dallas	548.0	37,280,793	4,983	1,469	511,054	84,611	3,024	3,534	238	475	491,446
Intel Atom S1260	216.1	5,828,059	1,286	640	254,430	40,083	1,579	1,325	84	171	388,333
AWS m1.medium											
Rackspace 1GB Dallas											
Rackspace 512MB Dallas											
AWS m1.small											
Raspberry Pi											
AWS t1.micro											
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Benchmark Comparison		
Environment	c-ray 1.1 (seconds) (cat scene | ./c-ray-mt -t 32 -s 7500x3500 > foo.ppm)	c-ray 1.1 (seconds) (cat sphfract | ./c-ray-mt -t 32 -s 1920x1200 -r 8 > foo.ppm)
Intel Xeon E3-1230 V3	2	35
Intel Xeon E3-1220 V3	3	39
AMD Opteron 3380	4	79
Intel C2750	5	86
AWS m3.2xlarge	4	87
Rackspace 30GB Dallas	5	99
AWS m1.xlarge	8	119
Rackspace 15GB Dallas	6	135
Intel Xeon L5520	7	141
AWS m3.xlarge	7	168
Rackspace 8GB Dallas	9	198
AWS m1.large	20	296
Rackspace 4GB Dallas	19	394
Rackspace 2GB Dallas	19	395
AWS m1.medium	32	478
Rackspace 512MB Dallas	39	790
Rackspace 1GB Dallas	39	791
AWS m1.small	64	964
Intel Atom S1260	86	1297
AWS t1.micro	142	2780
Raspberry Pi	298	7243
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Benchmark Comparison		
Environment	Crafty Bench Nodes/ s	Crafty Bench Time (s)
Intel Xeon E3-1220 V3	5,564,049	68.47
Intel Xeon E3-1230 V3	5,423,839	70.24
AWS m3.xlarge	4,251,902	89.60
AWS m3.2xlarge	4,104,400	92.82
AMD Opteron 3380	3,438,982	110.78
AWS m1.xlarge	2,757,059	138.18
AWS m1.medium	2,742,499	205.90
AWS m1.large	2,605,216	216.75
Rackspace 15GB Dallas	2,472,068	154.11
Rackspace 30GB Dallas	2,469,344	154.28
Rackspace 512MB Dallas	2,446,352	155.73
Rackspace 1GB Dallas	2,443,906	155.89
Rackspace 2GB Dallas	2,438,523	156.23
Rackspace 8GB Dallas	2,429,348	156.82
Rackspace 4GB Dallas	2,411,816	157.96
Intel Xeon L5520	2,223,476	171.34
Intel C2750	1,842,751	206.74
AWS m1.small	1,361,627	414.71
AWS t1.micro	500,071	1,129.20
Intel Atom S1260	300,748	1,266.74
Raspberry Pi	N/A	N/A
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Benchmark Comparison				
Environment	pts/stream Triad (MB/s)	pts/compress-7zip (MIPS)	pts/openssl (signs/s)	pts/pybench (ms)
Intel Xeon E3-1230 V3	13,025.77	20,484	129.57	1,745
AMD Opteron 3380	10,868.08	14,431	75.23	2,843
Intel Xeon E3-1220 V3	13,793.39	14,254	133.13	1,702
AWS m3.2xlarge	25,720.14	14,208	90.07	2,602
Rackspace 30GB Dallas	9,244.96	11,273	60.40	4,579
Intel C2750	12,063.82	9,968	29.40	5,951
Rackspace 15GB Dallas	9,173.70	8,828	60.50	4,539
Intel Xeon L5520	13,171.95	8,616	35.70	5,055
AWS m3.xlarge	24,318.53	8,291	93.10	2,504
AWS m1.xlarge	16,580.37	6,938	44.37	4,046
Rackspace 8GB Dallas	8,927.35	5,879	60.13	4,529
Rackspace 2GB Dallas	8,171.34	3,213	60.40	4,533
Rackspace 4GB Dallas	6,443.73	3,186	60.40	4,522
AWS m1.large	7,470.13	2,644	35.80	3,584
AWS m1.medium	6,401.04	2,070	44.27	4,063
Rackspace 512MB Dallas	4,581.37	1,798	60.27	4,569
Rackspace 1GB Dallas	4,636.35	1,784	60.57	4,611
AWS m1.small	6,442.46	1,026	22.17	6,777
Intel Atom S1260	1,759.70	754	3.60	40,703
AWS t1.micro	3,577.59	478	5.70	3,202
Raspberry Pi	293.51	193	1.90	76,416
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TECHNICAL SPECIFICATIONS

Embedded Appliance System:	specially designed for advanced routing, firewalling and IDS/IPS protection with expansions capability to act as a general purpose gateway and controlling border including high disk performance I/O. Perfect for BGP and OSPF routing, Firewall, IDS/IPS, Anti-DDoS, Next Generation Firewall and WAF (Web Application Firewall). Made for big and medium-big business and mission-critical enterprise needs.
Processor:	2.4Ghz 8 core processor (Octa Core) on logical board 4MB cache; AES-NI support for crypto offloading;
Console:	full I/O supported from 10 pins RJ-45 RS232 console;
Memory:	2 slots 240P DDR3 DIMM, up to 16GB RAM (powered by 1x4GB default);
Chassis:	1U Rack Mount, with rack mount kit;

Chassis Front:	4-keys Keypad & 2 independent lines LCM display (both are fully programmable/scriptable); 6x RJ45 LAN ports; 2xUSB 2.0 ports; 1x RJ45 S232 console port; power, disk and info led indicators; front expansion bay for ethernet optical (fibre) and electric (copper) expansions (see expansion ref sheet);
Chassis Rear:	2 chassis cooling fans; power input; power supply; power/reset buttom; PCIe Half-Length Low-Profile expansion slot;
LCM display:	is BSD (and Linux) friendly: echo your text straight to device driver;
Power Source:	110v/220Vac default; **36Vdc** optional; 48Vdc optional; **72Vdc** optional;
Included Storage:	1x32GB SSD (Solid State Drive) on SATA3 controller;
Virtualization:	VT-x supported;

ADDITIONAL TECHNICAL SPECIFICATIONS

- Logical Board & Processor Features: FPU, VME, DE, PSE, TSC, MSR, PAE, MCE, CX8, APIC, SEP, MTRR, PGE, MCA, CMOV, PAT, PSE36, CLFLUSH, DTS, ACPI, MMX, FXSR, SSE, SSE2, SS, HTT, TM, PBE, SSE3, PCLMULQDQ, DTES64, MON, DS_CPL, VMX, EST, TM2, SSSE3, CX16, xTPR, PDCM, SSE4.1, SSE4.2, MOVBE, POPCNT, TSCDLT, AESNI, RDRAND, SYSCALL, NX, RDTSCP, LM, LAHF, Prefetch, TSCADJ, SMEP, ENHMOVSB
- RTC Intel Watchdog triggers to reset the device when kernel interrupt timer overflows;
- Reset-on-failure; start on power; Internal lithium battery; CPU Fan Speed monitoring available;
- Full North Bridge & South Bridge configuration access; P-State, HPET1 & HPET2 timers and events;
- ACPI INTEL, TIANO
- Thermal P-State information; Speedstep technology supported; C-State CPU Freq supported;
- 1333Mhz Front Side Bus (FSB) mininal freq; XD execute bit switch supported;
- **Hardware Diagnostics:** special mini-PCIe diagnostic module supported (not included);
- **MTBF:** 83,800h
- Intel Video GPU, CPU Affinity capable; OpenCL capable; Video profile: 2048x1536 pixels 32bits @ 85Hz;
- **USB:** 4 ports; 2 available on chassis front; 2 internal-only (expansion);
- Storage temperature: from -20 to 90 celsius;
- Humidity: 5~90% *non-condensing;*
- Dimensions (mm): 431 x 44 x 305;
- Weight: 4.1Kg, 8Kg (packaged for shipping);

NETWORK INTERFACES SPECS

- **Device driver igb(4):** Intel i210AT chipset on ports 0 and 1; Intel 88E1543 on ports 2-5;
- **6x Intel Gigabit** ports, RJ45, 10/100/1000Mbit/s auto-select;
- **MSI-X Interrupts; Adaptative Interrupt** (no device polling required);
- TSO, LRO and Jumbo Frames supported;
- 10baseT/UTP, 100baseTX, 1000baseSX, 1000baseTX, full-duplex, half-duplex operation mode;
- IEEE 802.1q (vlan tagging); IEEE 802.1Q-in-Q;
- WOL (Wake on Lan); Link Aggregation (trunking, lagging);
- PXE boot (port 4);
- 5 vectors MSI-X interrupts (minimum) on ports 0 and 1;
- 9 vectors MSI-X interrupts (minimum) on ports 2, 3, 4 and 5;
- Per port RX/TX independent queues (multi-threaded, CPU Affinity ready);
- **Netmap** (BSD) capable, ready, tested and recommended;
- PF_RING (Linux) capable, ready and tested;
- Intel DPDK capable, ready and tested;
- **Bypass:** 3rd generation Intel WDT supported trigger on 3 bypass segments (6 NICs, 3 pairs), for Fail Open usage;
- Perfect Choice for Bastion Host (in-kernel triggered WDT bypass for fail-open or power-down bypass);

EXTREME CONDITIONS READY

- **Operating temperature:** from -10 to 70 celsius; cpu cooling available but optional (non mobile parts required)
- **Low Heat emission** and low energy power;
- Partial unstabilized power source supported;
- Uncooled processor (only head dissipation) ready for mission-critical extreme environments;
- Cooling flow dissipation;
- 2 System Cooling FAN on chassis;

EXPANSIONS

- 1 PCI Express 8x Gold Finger w/ expansion board (included);
- Swapable front ethernet modules bay;
- Up to 8 electric Intel 1Gbit/s ports (total **14 ports** 1Gbit/s Intel igb(4));
- Up to 4 electric Intel 1Gbit/s ports (total **10 ports** 1Gbit/s Intel igb(4) - recommended best performance on all ports);
- Up to **4 SFP+ optical ports** Intel 10Gbit/s;
- Up to **4 SFP optical ports** Intel 1Gbit/s;
- 2x SSD/HDD 2.5" on SATA 3.0 (SATA600);
- Chassis expansion: 2x2.5" disk;
- 4x SATA slots, 1xSATA1; 1xSATA2; 2xSATA3 - chassis ready for 2x SSD/HDD 2.5", other disks must be SATA DOM;
- 1x mini-PCIe (wifi ready);
- 1x Compact Flash Type II slot;
- Up to 4 USB ports;
- Dual mini-PCIe front expansion with SIM Card reader, for Wifi and 3G/4G/LTE cards (USB or PCI signaled options);

INTEL® TECHNOLOGY

- AES-NI supported for crypto offloading;
- x86_64 (64 bits) arch;
- MPS 1.4 Simetric Multi Processing (SMP) capable;
- **Made for Open Source** (BSD & Linux);
- Hand-picked **Intel Servers** chipset;
- Intel i210AT network chipset (netmap ready);
- Intel 88E1543 network chipset (netmap ready);
- All networking ports controlled by igb(4) driver;
- ICH8M intel logical board chipset;
- Chipset Intel "Rangeley";
- Virtualization VT-x;

EXPANSIONS FOR NETMAP L-800, 1GBIT/S COPPER

Here is the listing for **1Gbit/s** wire (copper) expansion ports with **RJ45** connectors for ServerU Netmap L-800.

MODEL	PORTS	CHIPSET	TECHNOLOGY
G801-1	8x 1Gbit/s	8x Intel i210 AT	Copper, RJ45, Bypass 3G
G801-2	8x 1Gbit/s	8x Intel i210 AT	Copper, RJ45
G428-1	4x 1Gbit/s	1x Intel i350 AM4	Copper, RJ45, Bypass 3G
G428-2	4x 1Gbit/s	1x Intel i350 AM4	Copper, RJ45

EXPANSIONS FOR NETMAP L-800, 10GBIT/S COPPER

Here is the listing for **10Gbit/s** wire (copper) expansion ports with **RJ45** connectors for ServerU Netmap L-800.

MODEL	PORTS	CHIPSET	TECHNOLOGY
T202-1	2x 10Gbit/s	Intel X540	Copper, RJ45
T202-1	2x 10Gbit/s	Intel X540	Copper, RJ45

FOR OPEN SOURCE

Specially designed for FreeBSD, ProApps, pfSense, OpenBSD & Linux

NETMAP READY

Netmap technology enables up to 13x more performance for packet capturing and processing.

MID & BIG BUSINESS

ServerU Netmap L-800 is our best offer for an embedded network-centric appliance at High End class.

- 24 HOURS DISPATCH FOR PRODUCTS IN STOCK
- MEASURED PERFORMANCE FOR INDIVIDUAL DEVICES
- RACKMOUNT KIT INCLUDED WITH 1U DEVICES
- WORLD WIDE SHIPPING FOR ALL SERVERU DEVICES

EXPANSIONS FOR NETMAP L-800, 1GBIT/S FIBRE (SFP)

Here is the listing for **1Gbit/s** expansion boards with Fibre (optic) ports and **SFP** connectors for ServerU Netmap L-800.

MODEL	PORTS	CHIPSET	TECHNOLOGY
S406-1	4x 1Gbit/s	1x Intel i350 AM4	Fibre, SFP

EXPANSIONS FOR NETMAP L-800, 10GBIT/S FIBRE (SFP+)

Here is the listing for **10Gbit/s** expansion boards with Fibre (optic) ports and **SFP+** connectors for ServerU Netmap L-800.

MODEL	PORTS	CHIPSET	TECHNOLOGY
X204-1	2x 10Gbit/s	Intel 82599ES	Fibre, SFP+
X205-1	2x 10Gbit/s	Intel 82599ES	Fibre, SFP+, 10G Bypass G3
X405-1	4x 10Gbit/s	Intel 82599ES	Fibre, SFP+

DESIGNED FOR FreeBSD · DESIGNED FOR ProApps · DESIGNED FOR GNU / Linux · DESIGNED FOR pfSense

RFC2544 BENCHMARKING

RFC2544 tests were performed without Netmap support and on a bidirectional IPv4 packets forwarding topology, without SMT support. This is the most fair and reliable scenario we want to guarantee to our customers. Tests are run by Ixia. Contact-us if you want to have the full testing report.

RFC2544 Testing Session 1 (2 ports)

* sender-DUT1-receiver (1:1 topology w/ 2 ports)

FRAME SIZE	FPS	THOUGHPUT BIT/S	PORTS
1508	79.3K	963M	Port0-Port1
1024	116.8K	957M	Port0-Port1
768	192.3K	952M	Port0-Port1
512	229.4K	939M	Port0-Port1
256	331.7K	679M	Port0-Port1
128	420.9K	431M	Port0-Port1
64	452.1K	231M	Port0-Port1
	Best: 452.1K/s	Best: 963Mbit/s	

RFC2544 Testing Session 2 (4 ports)

* sender-DUT1-receiver (2:2 topology w/ 4 ports)

FRAME SIZE	FPS	THOUGHPUT BIT/S	PORTS
1508	79K,79K	963M,963M	Port0-Port1,Port2-Port3
1024	116k,116k	957M,957M	Port0-Port1,Port2-Port3
768	192k,192k	952M,952M	Port0-Port1,Port2-Port3
512	229k,229k	939M,939M	Port0-Port1,Port2-Port3
256	331k,331k	679M,679M	Port0-Port1,Port2-Port3
128	420k,420k	431M,431M	Port0-Port1,Port2-Port3
64	452k,452k	231M,231M	Port0-Port1,Port2-Port3
	Best: 904K/s	Best: 1.92Gbit/s	

RFC2544 Testing Session 3 (6 ports)

* sender-DUT1-receiver (3:3 topology w/ 6 ports)

FRAME SIZE	FPS	THOUGHPUT BIT/S	PORTS
1508	79k,79k,79k	963M,963M,963M	Port0-Port1,Port2-Port3,Port4-Port5
1024	116K,116K,116K	957M,957M,957M	Port0-Port1,Port2-Port3,Port4-Port5
768	192K,192K,192K	952M,952M,952M	Port0-Port1,Port2-Port3,Port4-Port5
512	229K,229K,229K	939M,939M,939M	Port0-Port1,Port2-Port3,Port4-Port5
256	331K,331K,331K	679M,679M,679M	Port0-Port1,Port2-Port3,Port4-Port5
128	420K,420K,420K	431M,431M,431M	Port0-Port1,Port2-Port3,Port4-Port5
64	452K,452K,452K	231M,231M,231M	Port0-Port1,Port2-Port3,Port4-Port5
	Best: 1.35M/s	Best: 2.89Gbit/s	

RFC2544 Testing Session 4 (SFP+ Dual Port)

* sender-DUT1-receiver (1:1 topolgy w/ 2 SFP+ 10Gbit/s ports)

FRAME SIZE	FPS	THOUGHPUT BIT/S	PORTS
1508	2.7M,2.7M	5.64G,5.64G	Port0-Port1,Port1-Port0
1280	2.5M,2.5M	5.63G,5.63G	Port0-Port1,Port1-Port0
1024	2.0M,2.0M	5.6G,5.6G	Port0-Port1,Port1-Port0
512	1.4M,1.4M	5.5G,5.5G	Port0-Port1,Port1-Port0
256	718K,718K	4.01G,4.01G	Port0-Port1,Port1-Port0
128	564K,564K	2.5G,2.5G	Port0-Port1,Port1-Port0
64	475K,475K	1.39G,1.39G	Port0-Port1,Port1-Port0
	Best: 2.7M/s	Best: 5.64Gbit/s	

Bridged results tend to be 20% better, while Netmap VALE bridged interfaces tend to be 13 times better. Netmap L-800 device was tested in its default configuration, with 6 networking ports at 1000BaseT Intel 1GB media type and CPU and memory were not exhausted, keeping 50% average system idle. The full testing therefore include an expansion card with 2x10Gbit/s SFP+ ports. Test results are kernel-path, expected much higher (9-13 times better) performance in Netmap mode.

STORAGE PERFORMANCE

* tested with iobench, dd and stress

SATA 600 Channels: *(Intel SSD tested)*	440150261 bytes per second write; 641 tps write; 611319808 bytes per second read; 890 tps read;
CF Card	81788928 bytes per second write; 42 tps write; 84341268 butes per second read; 56 tps read;
Mikrotik	N/A

MEMORY PERFORMANCE

* stream_bench, iomem and stress

Memory Copy	4389MB/s; Avg time: 0.0364; Min time: 0.0364; Max time: 0.0364
Memory Scale	4521MB/s; Avg time: 0.0354; Min time: 0.0353; Max time: 0.0354
Memory Add	4718MB/s; Avg time: 0.0508; Min time: 0.0508; Max time: 0.0508
Memory Triad	4973MB/s; Avg time: 0.0482; Min time: 0.0482; Max time: 0.0482

NETWORK PERFORMANCE

* RFC2544 tested results summary (sender-DUT1-receiver)

Aggregated Thorughput *(without Netmap)*	**2.89Gbit/s forwarding rate** on DUT1; 1.35Mpps/s forwarding rate on DUT1; **2.94Gbit/s bridged rate** on DUT1 1.61Mpps/s bridged rate on DUT1;
Aggregated Thorughput *(with Netmap)*	13Gbit/s send/recv rate on DUT1; 18.1Mpps send/recv rate on DUT1; 13Gbit/s vale(4) bridged rate on DUT1 19.62Mpps vale(4) bridged rate on DUT1;
Best Interface Pairs	Port1 (igb1) & Port0 (igb0); Port4 (igb4) & Port5 (igb5)
Worse Interface Pairs	Port2 (igb2) if second SATA disk in use;

STATEFUL FIREWALLING

Tested systems had no tuning (standard reference); latest systems

ProApps, FreeBSD *(IPFW firewall)*	2.89Gbit/s forwarding rate on DUT1; 1.35Mpps/s forwarding rate on DUT1; 1.2M sessions / states with 8GB RAM; 2.1M de sessions / states with 16GB RAM
pfSense *(PF firewall)*	2.89Gbit/s forwarding rate on DUT1; 1.35Mpps/s forwarding rate on DUT1; 1.2M sessions / states with 8GB RAM; 2.1M de sessions / states with 16GB RAM
Linux (RHE & Fedora) *(Netfilter firewall)*	2.61Gbit/s forwarding rate on DUT1; 1.1Mpps/s forwarding rate on DUT1; 1.1M sessions / states with 8GB RAM; 1.8M de sessions / states with 16GB RAM
Mikrotik (ROS 7)	2.2Gbit/s forwarding rate on DUT1; 1Mpps/s forwarding rate on DUT1; 687599 sessions / states with 8GB RAM; 1.4M de sessions / states with 16GB RAM
OpenBSD	708Mbit/s forwarding rate on DUT1; 126Kpps/s forwarding rate on DUT1; 826460 sessions / states with 8GB RAM; 1.6M de sessions / states with 16GB RAM
Brocade vRouter 5600 *(DPDK mode)*	16.1Gbit/s forwarding rate on DUT1; 4.7Mpps forwarding rate on DUT1; 1.1M sessions / states with 8GB RAM; 1.8M de sessions / states with 16GB RAM

IDS (INTRUSION DETECTION SYSTEM) INSPECTION

Tested systems had no tuning (default reference); latest systems

ProApps, FreeBSD *(Suricata IDP)*	2.89Gbit/s processing rate on DUT1; 1.35Mpps/s capture rate on DUT1;
pfSense *(Snort IDP)*	2.68Gbit/s processing rate on DUT1; 1.12Mpps capture rate on DUT1;
Linux (RHE & Fedora) *(Suricata IDP)*	2.48Gbit/s processing rate on DUT1; 1.06Mpps capture rate on DUT1;
Mikrotik *(untested reliably)*	-
OpenBSD *(Snort IDP)*	1.75Gbit/s processing rate on DUT1; 780Kpps capture rate on DUT1;

ROUTING PERFORMANCE

Tested systems had no tuning (default reference); latest systems

ProApps, FreeBSD, pfSense	2.89Gbit/s forwarding rate on DUT1; 1.35Mpps/s forwarding rate on DUT1;
Linux (RHE & Fedora)	2.89Gbit/s forwarding rate on DUT1; 1.35Mpps/s forwarding rate on DUT1;
Mikrotik	2.75Gbit/s forwarding rate on DUT1; 1.22Mpps/s forwarding rate on DUT1;
OpenBSD	904Mbit/s forwarding rate on DUT1; 188Kpps/s forwarding rate on DUT1;
Brocade vRouter 5600 (DPDK)	23Gbit/s forwarding rate on DUT1; 6.8Mpps/s forwarding rate on DUT1;

NETMAP PERFORMANCE

Special interest Netmap performance on ProApps & FreeBSD

Suricata IDS mode *(ProApps & FreeBSD)*	10.4Mpps/s on a 10Gbit interface; 2x9.8Mpps (19.6Mpps agg);
Firewall (IPFW) *(kipfw + VALE)*	9Mpps/s on a 10Gbit interface; 2x9Mpps (18Mpps agg);

MORE INFORMATION

More information about this product can be found on our website.

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