



# VSPERF Results

*Release draft (22ffe5b)*

**OPNFV**

May 07, 2016



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## OPNFV BRAHMAPUTRA SCENARIOS

Available Tests and aspects of scenarios:

Framework Test	Definition
phy2phy_tput	PacketLossRatio for Phy2Phy
back2back	BackToBackFrames for Phy2Phy
phy2phy_tput_mod_vlan	PacketLossRatioFrameModification for Phy2Phy
phy2phy_cont	Phy2Phy blast vswitch at x% TX rate and measure throughput
pvp_cont	PVP blast vswitch at x% TX rate and measure throughput
pvvp_cont	PVVP blast vswitch at x% TX rate and measure throughput
phy2phy_scalability	Scalability0PacketLoss for Phy2Phy
pvp_tput	PacketLossRatio for PVP
pvp_back2back	BackToBackFrames for PVP
pvvp_tput	PacketLossRatio for PVVP
pvvp_back2back	BackToBackFrames for PVVP
phy2phy_cpu_load	CPU0PacketLoss for Phy2Phy
phy2phy_mem_load	Same as CPU0PacketLoss but using a memory intensive app

Supported deployment scenarios:

- **Phy2Phy**: Physical port -> vSwitch -> Physical port.
- **PVP**: Physical port -> vSwitch -> VNF -> vSwitch -> Physical port.
- **PVVP**: Physical port -> vSwitch -> VNF -> vSwitch -> VNF -> vSwitch -> Physical port.

Loopback applications in the Guest can be:

- **DPDK testpmd**.
- **Linux Bridge**.
- **l2fwd**.

Supported traffic generators:

- **Ixia**: IxOS and IxNet.
- **Spirent**.
- **Dummy**.



## OPNFV BRAHMAPUTRA RESULTS

The vsperf CI jobs that were used to obtain the results can be found at [https://wiki.opnfv.org/wiki/vsperf\\_results](https://wiki.opnfv.org/wiki/vsperf_results).

The following table maps the results in the test dashboard to the appropriate test case in the VSPERF Framework and specifies the metric the vertical/Y axis is plotting. **Please note**, the presence of dpdk within a test name signifies that the vswitch under test was OVS with DPDK, while its absence indicates that the vswitch under test was stock OVS.

Dashboard Test	Framework Test	Metric	Guest Interface
tput_ovsdpdk	phy2phy_tput	Throughput (FPS)	N/A
tput_ovs	phy2phy_tput	Throughput (FPS)	N/A
b2b_ovsdpdk	back2back	Back-to-back value	N/A
b2b_ovs	back2back	Back-to-back value	N/A
tput_mod_vlan_ovs	phy2phy_tput_mod_vlan	Throughput (FPS)	N/A
tput_mod_vlan_ovsdpdk	phy2phy_tput_mod_vlan	Throughput (FPS)	N/A
scalability_ovs	phy2phy_scalability	Throughput (FPS)	N/A
scalability_ovsdpdk	phy2phy_scalability	Throughput (FPS)	N/A
pvp_tput_ovsdpdkuser	pvp_tput	Throughput (FPS)	vhost-user
pvp_tput_ovsvirtio	pvp_tput	Throughput (FPS)	virtio-net
pvp_b2b_ovsdpdkuser	pvp_back2back	Back-to-back value	vhost-user
pvp_b2b_ovsvirtio	pvp_back2back	Back-to-back value	virtio-net
pvvp_tput_ovsdpdkuser	pvvp_tput	Throughput (FPS)	vhost-user
pvvp_tput_ovsvirtio	pvvp_tput	Throughput (FPS)	virtio-net
pvvp_b2b_ovsdpdkuser	pvvp_back2back	Throughput (FPS)	vhost-user
pvvp_b2b_ovsvirtio	pvvp_back2back	Throughput (FPS)	virtio-net

The loopback application in the VNF used for PVP and PVVP scenarios was DPDK testpmd.





## PERFORMANCE REPORT FOR OPEN VSWITCH WITH DPDK SUPPORT

### 3.1 Introduction

The objective of the OPNFV project titled “**Characterise vSwitch Performance for Telco NFV Use Cases**”, is to evaluate a virtual switch to identify its suitability for a Telco Network Function Virtualization (NFV) environment. As well as this, the project aims to identify any gaps or bottlenecks in order to drive architectural changes to improve virtual switch performance and determinism. The purpose of this document is to summarize the results of the tests carried out on the virtual switch in the Network Function Virtualization Infrastructure (NFVI) and, from these results, provide evaluations and recommendations for the virtual switch. Test results will be outlined in *details-of-LTR*, preceded by the *document-identifier* and the *scope* and *references*).

This document is currently in draft form.

#### 3.1.1 Document identifier

The document id will be used to uniquely identify versions of the LTR. The format for the document id will be: OPNFV\_vswitchperf\_LTR\_rel\_STATUS, the status is one of: DRAFT, REVIEWED, CORRECTED or FINAL. The document id for this version of the LTR is: OPNFV\_vswitchperf\_LTR\_Brahmaputra\_DRAFT.

#### 3.1.2 Scope

The scope of this report is to detail the results of the tests that have been performed on the virtual switch. This report will also evaluate the results of these tests and, based on these evaluations, provide recommendations on the suitability of the virtual switch for use in a Telco NFV environment.

#### 3.1.3 References

OPNFV\_vswitchperf\_LTD\_Brahmaputra\_REVIEWED

### 3.2 Details of the Level Test Report

This section provides a *test-results-overview*. Also included are the *rationale* and the *conclusions*.

### **3.2.1 Test ID: PHY2PHY\_TPUT**

#### **Test Environment**

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: phy2phy\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

#### **Test results for packet size: 64**

A detailed summary of the main results is outlined below.

#### **Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	18482688.822
tx_rate_mbps	Unknown
throughput_rx_mbps	9463.137
tx_rate_percent	62.102
throughput_rx_percent	62.102
frame_loss_percent	0.000
min_latency_ns	4400.000
max_latency_ns	555220.000
avg_latency_ns	7338.500
type	rfc2544
packet_size	64
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	37172
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	27.94
majflt/s	0.00
VSZ	4143516
RSS	20637
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	37171
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3332
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	16761271.223
tx_rate_mbps	Unknown
throughput_rx_mbps	17163.542
tx_rate_percent	99.227
throughput_rx_percent	99.227
frame_loss_percent	0.000
min_latency_ns	5540.000
max_latency_ns	219020.000
avg_latency_ns	11737.000
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	37172
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	27.94
majflt/s	0.00
VSZ	4143516
RSS	20637
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	37171
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3332
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	4699184.725
tx_rate_mbps	Unknown
throughput_rx_mbps	19247.861
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	18100.000
max_latency_ns	60620.000
avg_latency_ns	46012.500
type	rfc2544
packet_size	512
traffic_type	udp

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	37172
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	27.94
majflt/s	0.00
VSZ	4143516
RSS	20637
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	37171
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3332
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	2394608.178
tx_rate_mbps	Unknown
throughput_rx_mbps	19616.630
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	18240.000
max_latency_ns	56200.000
avg_latency_ns	40072.500
type	rfc2544
packet_size	1024
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	37172
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	27.94
majflt/s	0.00
VSZ	4143516
RSS	20637
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	37171
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3332
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

**Test results for packet size: 1518**

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:



Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1625470.439
tx_rate_mbps	Unknown
throughput_rx_mbps	19739.713
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	17780.000
max_latency_ns	50000.000
avg_latency_ns	37087.000
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	37172
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	27.94
majflt/s	0.00
VSZ	4143516
RSS	20637
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	37171
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3332
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 3.2.2 Test ID: BACK2BACK

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB

- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	22990
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	64
traffic_type	udp

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	39111
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.90
majflt/s	0.00
VSZ	4143516
RSS	20668
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	39110
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	1696799
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	39111
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	25.90
majflt/s	0.00
VSZ	4143516
RSS	20668
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	39110
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	70488721
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	512
traffic_type	udp

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	39111
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	25.90
majflt/s	0.00
VSZ	4143516
RSS	20668
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	39110
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	35919540
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1024
traffic_type	udp

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	39111
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.90
majflt/s	0.00
VSZ	4143516
RSS	20668
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	39110
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:



Metric	Result
b2b_frames	24382314
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	39111
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	25.90
majflt/s	0.00
VSZ	4143516
RSS	20668
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	39110
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Anomalies

No anomalies were detected during the course of this test.

### Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.2.3 Test ID: PHY2PHY\_TPUT\_MOD\_VLAN

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- NIC(s):
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: phy2phy\_tput\_mod\_vlan
- Description: LTD.Throughput.RFC2544.PacketLossRatioFrameModification
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : False

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	9701746.868
tx_rate_mbps	Unknown
throughput_rx_mbps	5277.750
tx_rate_percent	65.195
throughput_rx_percent	68.300
frame_loss_percent	0.000
min_latency_ns	5120.000
max_latency_ns	137900.000
avg_latency_ns	6624.000
type	rfc2544
packet_size	64
traffic_type	udp

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	41865
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	23.70
majflt/s	0.00
VSZ	4143516
RSS	20658
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	41864
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3348
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	6290266.983
tx_rate_mbps	Unknown
throughput_rx_mbps	6642.522
tx_rate_percent	74.477
throughput_rx_percent	76.490
frame_loss_percent	0.000
min_latency_ns	4020.000
max_latency_ns	49860.000
avg_latency_ns	4542.000
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	41865
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	23.70
majflt/s	0.00
VSZ	4143516
RSS	20658
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	41864
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3348
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	2331451.695
tx_rate_mbps	Unknown
throughput_rx_mbps	9624.233
tx_rate_percent	99.227
throughput_rx_percent	99.973
frame_loss_percent	0.000
min_latency_ns	5620.000
max_latency_ns	227200.000
avg_latency_ns	14802.000
type	rfc2544
packet_size	512
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	41865
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	23.70
majflt/s	0.00
VSZ	4143516
RSS	20658
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	41864
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3348
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1188058.542
tx_rate_mbps	Unknown
throughput_rx_mbps	9770.593
tx_rate_percent	99.227
throughput_rx_percent	99.607
frame_loss_percent	0.000
min_latency_ns	5760.000
max_latency_ns	53100.000
avg_latency_ns	7206.000
type	rfc2544
packet_size	1024
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	41865
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	23.70
majflt/s	0.00
VSZ	4143516
RSS	20658
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	41864
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3348
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:



Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	806458.203
tx_rate_mbps	Unknown
throughput_rx_mbps	9819.435
tx_rate_percent	99.227
throughput_rx_percent	99.485
frame_loss_percent	0.000
min_latency_ns	6160.000
max_latency_ns	225620.000
avg_latency_ns	7446.000
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	41865
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	23.70
majflt/s	0.00
VSZ	4143516
RSS	20658
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	41864
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3348
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 3.2.4 Test ID: PHY2PHY\_SCALABILITY

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB

- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: phy2phy\_scalability
- Description: LTD.Scalability.Flows.RFC2544.0PacketLoss
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	19633561.336
tx_rate_mbps	Unknown
throughput_rx_mbps	10052.383
tx_rate_percent	65.969
throughput_rx_percent	65.969
frame_loss_percent	0.000
min_latency_ns	5800.000
max_latency_ns	753280.000
avg_latency_ns	8161.000
type	rfc2544
packet_size	64
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	44832
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.10
majflt/s	0.00
VSZ	4143516
RSS	22646
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	44831
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	16630609.686
tx_rate_mbps	Unknown
throughput_rx_mbps	17029.744
tx_rate_percent	98.453
throughput_rx_percent	98.453
frame_loss_percent	0.000
min_latency_ns	5440.000
max_latency_ns	368680.000
avg_latency_ns	10712.500
type	rfc2544
packet_size	128
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	44832
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.10
majflt/s	0.00
VSZ	4143516
RSS	22646
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	44831
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	4699150.844
tx_rate_mbps	Unknown
throughput_rx_mbps	19247.722
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	16880.000
max_latency_ns	94840.000
avg_latency_ns	66430.500
type	rfc2544
packet_size	512
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	44832
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.10
majflt/s	0.00
VSZ	4143516
RSS	22646
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	44831
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	2394599.734
tx_rate_mbps	Unknown
throughput_rx_mbps	19616.561
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	30900.000
max_latency_ns	79100.000
avg_latency_ns	64013.500
type	rfc2544
packet_size	1024
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	44832
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.10
majflt/s	0.00
VSZ	4143516
RSS	22646
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	44831
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1625463.937
tx_rate_mbps	Unknown
throughput_rx_mbps	19739.634
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	33340.000
max_latency_ns	81760.000
avg_latency_ns	65227.000
type	rfc2544
packet_size	1518
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	44832
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	25.10
majflt/s	0.00
VSZ	4143516
RSS	22646
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	44831
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47608
RSS	3344
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Anomalies

No anomalies were detected during the course of this test.

### Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.2.5 Test ID: PVP\_TPUT

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
- VNF: QemuDpdkVhostUser, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvp\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: pvp
- Traffic type: rfc2544
- Bidirectional : True

#### Test results for packet size: 64

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	5131607.930
tx_rate_mbps	Unknown
throughput_rx_mbps	2627.383
tx_rate_percent	17.242
throughput_rx_percent	17.242
frame_loss_percent	0.000
min_latency_ns	7840.000
max_latency_ns	125660.000
avg_latency_ns	10636.500
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	46883
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	22.97
majflt/s	0.00
VSZ	20920732
RSS	22744
%MEM	0.03
kB_rd/s	0.10
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	46882
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	47018
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.04
CPU	.
minflt/s	30.36
majflt/s	0.00
VSZ	4858824
RSS	46467
%MEM	0.07
kB_rd/s	0.36
kB_wr/s	13.99
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	6440019.337
tx_rate_mbps	Unknown
throughput_rx_mbps	6594.580
tx_rate_percent	38.125
throughput_rx_percent	38.125
frame_loss_percent	0.000
min_latency_ns	11740.000
max_latency_ns	158520.000
avg_latency_ns	29845.000
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	46883
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	22.97
majflt/s	0.00
VSZ	20920732
RSS	22744
%MEM	0.03
kB_rd/s	0.10
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	46882
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	47018
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.04
CPU	.
minflt/s	30.36
majflt/s	0.00
VSZ	4858824
RSS	46467
%MEM	0.07
kB_rd/s	0.36
kB_wr/s	13.99
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	4698088.019
tx_rate_mbps	Unknown
throughput_rx_mbps	19243.369
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	49960.000
max_latency_ns	836040.000
avg_latency_ns	795167.500
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	46883
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	22.97
majflt/s	0.00
VSZ	20920732
RSS	22744
%MEM	0.03
kB_rd/s	0.10
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	46882
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	47018
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.04
CPU	.
minflt/s	30.36
majflt/s	0.00
VSZ	4858824
RSS	46467
%MEM	0.07
kB_rd/s	0.36
kB_wr/s	13.99
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	2394534.643
tx_rate_mbps	Unknown
throughput_rx_mbps	19616.028
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	33460.000
max_latency_ns	162100.000
avg_latency_ns	133218.500
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	46883
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	22.97
majflt/s	0.00
VSZ	20920732
RSS	22744
%MEM	0.03
kB_rd/s	0.10
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	46882
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	47018
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.04
CPU	.
minflt/s	30.36
majflt/s	0.00
VSZ	4858824
RSS	46467
%MEM	0.07
kB_rd/s	0.36
kB_wr/s	13.99
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1625454.071
tx_rate_mbps	Unknown
throughput_rx_mbps	19739.514
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	34960.000
max_latency_ns	112200.000
avg_latency_ns	95779.000
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	46883
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	22.97
majflt/s	0.00
VSZ	20920732
RSS	22744
%MEM	0.03
kB_rd/s	0.10
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	46882
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	47018
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.04
CPU	.
minflt/s	30.36
majflt/s	0.00
VSZ	4858824
RSS	46467
%MEM	0.07
kB_rd/s	0.36
kB_wr/s	13.99
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.2.6 Test ID: PVP\_BACK2BACK

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
- VNF: QemuDpdkVhostUser, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvp\_back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: pvp
- Traffic type: rfc2544
- Bidirectional : True

#### Test results for packet size: 64

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	6811
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	49321
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	16.75
majflt/s	0.00
VSZ	20920732
RSS	20725
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	49320
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	49454
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	1.55
majflt/s	0.00
VSZ	4863952
RSS	60543
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	4.82
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:



Metric	Result
b2b_frames	8215
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	49321
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	16.75
majflt/s	0.00
VSZ	20920732
RSS	20725
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	49320
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47708
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	49454
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	1.55
majflt/s	0.00
VSZ	4863952
RSS	60543
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	4.82
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	70488689
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	49321
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.75
majflt/s	0.00
VSZ	20920732
RSS	20725
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	49320
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	49454
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	1.55
majflt/s	0.00
VSZ	4863952
RSS	60543
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	4.82
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	35919540
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	49321
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.75
majflt/s	0.00
VSZ	20920732
RSS	20725
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	49320
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	49454
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	1.55
majflt/s	0.00
VSZ	4863952
RSS	60543
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	4.82
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	24382314
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	49321
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.75
majflt/s	0.00
VSZ	20920732
RSS	20725
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	49320
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
RSS	3360
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	49454
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	1.55
majflt/s	0.00
VSZ	4863952
RSS	60543
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	4.82
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.2.7 Test ID: PVVP\_TPUT

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB



- Virtual Switch Set-up: pvvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
- VNF: QemuDpdkVhostUser, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvvp\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: pvvp
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	0
tx_rate_mbps	Unknown
throughput_rx_mbps	0
tx_rate_percent	1.773
throughput_rx_percent	0.000
frame_loss_percent	100.000
min_latency_ns	0
max_latency_ns	0
avg_latency_ns	0
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	54005
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.53
majflt/s	0.00
VSZ	37697948
RSS	24164
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	54004
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	2284
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54264
%usr	0.00
%system	0.00
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	0.49
majflt/s	0.00
VSZ	4796868
RSS	34535
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	9.23
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54143
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.01
CPU	.
minflt/s	4.12
majflt/s	0.00
VSZ	4816844
RSS	56852
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	0
tx_rate_mbps	Unknown
throughput_rx_mbps	0
tx_rate_percent	1.773
throughput_rx_percent	0.000
frame_loss_percent	100.000
min_latency_ns	0
max_latency_ns	0
avg_latency_ns	0
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	54005
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.53
majflt/s	0.00
VSZ	37697948
RSS	24164
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	54004
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	2284
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54264
%usr	0.00
%system	0.00
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	0.49
majflt/s	0.00
VSZ	4796868
RSS	34535
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	9.23
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54143
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.01
CPU	.
minflt/s	4.12
majflt/s	0.00
VSZ	4816844
RSS	56852
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	0
tx_rate_mbps	Unknown
throughput_rx_mbps	0
tx_rate_percent	1.773
throughput_rx_percent	0.000
frame_loss_percent	100.000
min_latency_ns	0
max_latency_ns	0
avg_latency_ns	0
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	54005
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.53
majflt/s	0.00
VSZ	37697948
RSS	24164
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	54004
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	2284
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54264
%usr	0.00
%system	0.00
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	0.49
majflt/s	0.00
VSZ	4796868
RSS	34535
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	9.23
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54143
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.01
CPU	.
minflt/s	4.12
majflt/s	0.00
VSZ	4816844
RSS	56852
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:



Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	0
tx_rate_mbps	Unknown
throughput_rx_mbps	0
tx_rate_percent	1.773
throughput_rx_percent	0.000
frame_loss_percent	100.000
min_latency_ns	0
max_latency_ns	0
avg_latency_ns	0
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	54005
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.53
majflt/s	0.00
VSZ	37697948
RSS	24164
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	54004
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	2284
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54264
%usr	0.00
%system	0.00
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	0.49
majflt/s	0.00
VSZ	4796868
RSS	34535
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	9.23
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54143
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.01
CPU	.
minflt/s	4.12
majflt/s	0.00
VSZ	4816844
RSS	56852
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	0
tx_rate_mbps	Unknown
throughput_rx_mbps	0
tx_rate_percent	1.773
throughput_rx_percent	0.000
frame_loss_percent	100.000
min_latency_ns	0
max_latency_ns	0
avg_latency_ns	0
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	54005
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.53
majflt/s	0.00
VSZ	37697948
RSS	24164
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	54004
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
RSS	2284
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54264
%usr	0.00
%system	0.00
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	0.49
majflt/s	0.00
VSZ	4796868
RSS	34535
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	9.23
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	54143
%usr	0.00
%system	0.04
%guest	199.95
%CPU	100.01
CPU	.
minflt/s	4.12
majflt/s	0.00
VSZ	4816844
RSS	56852
%MEM	0.09
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.2.8 Test ID: PVVP\_BACK2BACK

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsDpdkVhost, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- DPDK Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
- VNF: QemuDpdkVhostUser, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvvp\_back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: pvvp
- Traffic type: rfc2544
- Bidirectional : True

#### Test results for packet size: 64

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	8514
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswhchd	
Statistic	Value
UID	0
PID	57880
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	23.36
majflt/s	0.00
VSZ	37697948
RSS	18784
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	57879
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47716
RSS	3364
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58136
%usr	0.00
%system	0.03
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	1.52
majflt/s	0.00
VSZ	4720588
RSS	37703
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	6.14
kB_ccwr/s	0.00



Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58027
%usr	0.00
%system	0.04
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4859336
RSS	95588
%MEM	0.15
kB_rd/s	0.01
kB_wr/s	0.03
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	5799
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	57880
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	23.36
majflt/s	0.00
VSZ	37697948
RSS	18784
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	57879
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47716
RSS	3364
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58136
%usr	0.00
%system	0.03
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	1.52
majflt/s	0.00
VSZ	4720588
RSS	37703
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	6.14
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58027
%usr	0.00
%system	0.04
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4859336
RSS	95588
%MEM	0.15
kB_rd/s	0.01
kB_wr/s	0.03
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	5108
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	57880
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	23.36
majflt/s	0.00
VSZ	37697948
RSS	18784
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	57879
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47716
RSS	3364
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58136
%usr	0.00
%system	0.03
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	1.52
majflt/s	0.00
VSZ	4720588
RSS	37703
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	6.14
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58027
%usr	0.00
%system	0.04
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4859336
RSS	95588
%MEM	0.15
kB_rd/s	0.01
kB_wr/s	0.03
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	280621
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	57880
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	23.36
majflt/s	0.00
VSZ	37697948
RSS	18784
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	57879
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47716
RSS	3364
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58136
%usr	0.00
%system	0.03
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	1.52
majflt/s	0.00
VSZ	4720588
RSS	37703
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	6.14
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58027
%usr	0.00
%system	0.04
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4859336
RSS	95588
%MEM	0.15
kB_rd/s	0.01
kB_wr/s	0.03
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	24382314
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	57880
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	23.36
majflt/s	0.00
VSZ	37697948
RSS	18784
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	57879
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47716
RSS	3364
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58136
%usr	0.00
%system	0.03
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	1.52
majflt/s	0.00
VSZ	4720588
RSS	37703
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	6.14
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	58027
%usr	0.00
%system	0.04
%guest	199.96
%CPU	100.00
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4859336
RSS	95588
%MEM	0.15
kB_rd/s	0.01
kB_wr/s	0.03
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 3.3 Rationale for decisions

The tests conducted do not have pass/fail/conditional-pass criteria. The test is simply conducted and the results are reported.

### 3.4 Conclusions and recommendations

The test results are stable. The vsperf CI jobs that were used to obtain the results can be found at [https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-05-07\\_07-08-30/vswitchperf\\_logs\\_2016-05-07\\_07-08-30.tar.gz](https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-05-07_07-08-30/vswitchperf_logs_2016-05-07_07-08-30.tar.gz).

### 3.5 General

#### 3.5.1 Glossary

- NFV - Network Function Virtualization
- Mbps - 1,000,000bps

#### 3.5.2 Document change procedures and history

Document ID	Author	Date Modified
<i>OPNFV_vswitchperf_LTR_ver_1.0_Jan_15_CN_DRAFT</i>	Christopher Nolan	23/01/2015
<i>OPNFV_vswitchperf_LTR_ver_1.1_Jan_15_CN_DRAFT</i>	Christopher Nolan	28/01/2015

## PERFORMANCE REPORT FOR OPEN VSWITCH

### 4.1 Introduction

The objective of the OPNFV project titled “**Characterise vSwitch Performance for Telco NFV Use Cases**”, is to evaluate a virtual switch to identify its suitability for a Telco Network Function Virtualization (NFV) environment. As well as this, the project aims to identify any gaps or bottlenecks in order to drive architectural changes to improve virtual switch performance and determinism. The purpose of this document is to summarize the results of the tests carried out on the virtual switch in the Network Function Virtualization Infrastructure (NFVI) and, from these results, provide evaluations and recommendations for the virtual switch. Test results will be outlined in *details-of-LTR*, preceded by the *document-identifier* and the *scope* and *references*).

This document is currently in draft form.

#### 4.1.1 Document identifier

The document id will be used to uniquely identify versions of the LTR. The format for the document id will be: OPNFV\_vswitchperf\_LTR\_rel\_STATUS, the status is one of: DRAFT, REVIEWED, CORRECTED or FINAL. The document id for this version of the LTR is: OPNFV\_vswitchperf\_LTR\_Brahmaputra\_DRAFT.

#### 4.1.2 Scope

The scope of this report is to detail the results of the tests that have been performed on the virtual switch. This report will also evaluate the results of these tests and, based on these evaluations, provide recommendations on the suitability of the virtual switch for use in a Telco NFV environment.

#### 4.1.3 References

OPNFV\_vswitchperf\_LTD\_Brahmaputra\_REVIEWED

### 4.2 Details of the Level Test Report

This section provides a *test-results-overview*. Also included are the *rationale* and the *conclusions*.

## 4.2.1 Test ID: PHY2PHY\_TPUT

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- NIC(s):
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60

Below are test details:

- Test ID: phy2phy\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	988189.284
tx_rate_mbps	Unknown
throughput_rx_mbps	505.953
tx_rate_percent	3.320
throughput_rx_percent	3.320
frame_loss_percent	0.000
min_latency_ns	4260.000
max_latency_ns	4821020.000
avg_latency_ns	194552.000
type	rfc2544
packet_size	64
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	62722
%usr	0.23
%system	1.45
%guest	0.00
%CPU	1.67
CPU	.
minflt/s	4.11
majflt/s	0.00
VSZ	2775648
RSS	14641
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	62721
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1083453.605
tx_rate_mbps	Unknown
throughput_rx_mbps	1109.456
tx_rate_percent	6.414
throughput_rx_percent	6.414
frame_loss_percent	0.000
min_latency_ns	4320.000
max_latency_ns	6152780.000
avg_latency_ns	305857.000
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	62722
%usr	0.23
%system	1.45
%guest	0.00
%CPU	1.67
CPU	.
minflt/s	4.11
majflt/s	0.00
VSZ	2775648
RSS	14641
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	62721
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	737562.017
tx_rate_mbps	Unknown
throughput_rx_mbps	3021.054
tx_rate_percent	15.695
throughput_rx_percent	15.695
frame_loss_percent	0.000
min_latency_ns	5840.000
max_latency_ns	670680.000
avg_latency_ns	33417.500
type	rfc2544
packet_size	512
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	62722
%usr	0.23
%system	1.45
%guest	0.00
%CPU	1.67
CPU	.
minflt/s	4.11
majflt/s	0.00
VSZ	2775648
RSS	14641
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	62721
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	764787.842
tx_rate_mbps	Unknown
throughput_rx_mbps	6265.142
tx_rate_percent	31.938
throughput_rx_percent	31.938
frame_loss_percent	0.000
min_latency_ns	6460.000
max_latency_ns	853460.000
avg_latency_ns	30972.500
type	rfc2544
packet_size	1024
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	62722
%usr	0.23
%system	1.45
%guest	0.00
%CPU	1.67
CPU	.
minflt/s	4.11
majflt/s	0.00
VSZ	2775648
RSS	14641
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	62721
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	808299.626
tx_rate_mbps	Unknown
throughput_rx_mbps	9815.991
tx_rate_percent	49.727
throughput_rx_percent	49.727
frame_loss_percent	0.000
min_latency_ns	6840.000
max_latency_ns	1430500.000
avg_latency_ns	46583.000
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	62722
%usr	0.23
%system	1.45
%guest	0.00
%CPU	1.67
CPU	.
minflt/s	4.11
majflt/s	0.00
VSZ	2775648
RSS	14641
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	62721
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.2.2 Test ID: BACK2BACK

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB

- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60

Below are test details:

- Test ID: back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

### **Test results for packet size: 64**

A detailed summary of the main results is outlined below.

#### **Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	5108
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	64
traffic_type	udp

#### **Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	65528
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	.
minflt/s	3.82
majflt/s	0.00
VSZ	2775644
RSS	25443
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	65527
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	3382
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	65528
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	3.82
majflt/s	0.00
VSZ	2775644
RSS	25443
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	65527
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

**Test results for packet size: 512**

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	1344
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	512
traffic_type	udp

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vsitchd	
Statistic	Value
UID	0
PID	65528
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	3.82
majflt/s	0.00
VSZ	2775644
RSS	25443
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	65527
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	1096
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1024
traffic_type	udp

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	65528
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	.
minflt/s	3.82
majflt/s	0.00
VSZ	2775644
RSS	25443
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	65527
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

**Test results for packet size: 1518**

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	1488
b2b_frame_loss_percent	0.0
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	65528
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	3.82
majflt/s	0.00
VSZ	2775644
RSS	25443
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	65527
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Anomalies

No anomalies were detected during the course of this test.

### Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 4.2.3 Test ID: PHY2PHY\_TPUT\_MOD\_VLAN

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- NIC(s):
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60

Below are test details:

- Test ID: phy2phy\_tput\_mod\_vlan
- Description: LTD.Throughput.RFC2544.PacketLossRatioFrameModification
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : False

#### Test results for packet size: 64

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	609189.945
tx_rate_mbps	Unknown
throughput_rx_mbps	331.399
tx_rate_percent	4.094
throughput_rx_percent	4.289
frame_loss_percent	0.000
min_latency_ns	4420.000
max_latency_ns	1785840.000
avg_latency_ns	55910.000
type	rfc2544
packet_size	64
traffic_type	udp

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	69609
%usr	0.22
%system	1.39
%guest	0.00
%CPU	1.60
CPU	.
minflt/s	4.50
majflt/s	0.00
VSZ	2775648
RSS	15714
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	69608
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	607053.511
tx_rate_mbps	Unknown
throughput_rx_mbps	641.049
tx_rate_percent	7.188
throughput_rx_percent	7.382
frame_loss_percent	0.000
min_latency_ns	4640.000
max_latency_ns	2203340.000
avg_latency_ns	90594.000
type	rfc2544
packet_size	128
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	69609
%usr	0.22
%system	1.39
%guest	0.00
%CPU	1.60
CPU	.
minflt/s	4.50
majflt/s	0.00
VSZ	2775648
RSS	15714
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	69608
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	550510.720
tx_rate_mbps	Unknown
throughput_rx_mbps	2272.508
tx_rate_percent	23.430
throughput_rx_percent	23.606
frame_loss_percent	0.000
min_latency_ns	5540.000
max_latency_ns	1850140.000
avg_latency_ns	56917.000
type	rfc2544
packet_size	512
traffic_type	udp

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	69609
%usr	0.22
%system	1.39
%guest	0.00
%CPU	1.60
CPU	.
minflt/s	4.50
majflt/s	0.00
VSZ	2775648
RSS	15714
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	69608
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	539822.387
tx_rate_mbps	Unknown
throughput_rx_mbps	4439.499
tx_rate_percent	45.086
throughput_rx_percent	45.259
frame_loss_percent	0.000
min_latency_ns	5980.000
max_latency_ns	1446040.000
avg_latency_ns	54001.000
type	rfc2544
packet_size	1024
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	69609
%usr	0.22
%system	1.39
%guest	0.00
%CPU	1.60
CPU	.
minflt/s	4.50
majflt/s	0.00
VSZ	2775648
RSS	15714
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	69608
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	529871.977
tx_rate_mbps	Unknown
throughput_rx_mbps	6451.721
tx_rate_percent	65.195
throughput_rx_percent	65.365
frame_loss_percent	0.000
min_latency_ns	6560.000
max_latency_ns	1271260.000
avg_latency_ns	31275.000
type	rfc2544
packet_size	1518
traffic_type	udp

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	69609
%usr	0.22
%system	1.39
%guest	0.00
%CPU	1.60
CPU	.
minflt/s	4.50
majflt/s	0.00
VSZ	2775648
RSS	15714
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	69608
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2992
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.2.4 Test ID: PHY2PHY\_SCALABILITY

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB

- Virtual Switch Set-up: p2p
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60

Below are test details:

- Test ID: phy2phy\_scalability
- Description: LTD.Scalability.Flows.RFC2544.0PacketLoss
- Deployment: p2p
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1218379.503
tx_rate_mbps	Unknown
throughput_rx_mbps	623.810
tx_rate_percent	4.094
throughput_rx_percent	4.094
frame_loss_percent	0.000
min_latency_ns	4380.000
max_latency_ns	2075200.000
avg_latency_ns	68248.000
type	rfc2544
packet_size	64
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	72406
%usr	0.22
%system	1.53
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	4.84
majflt/s	0.00
VSZ	2775652
RSS	12466
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	72405
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1214105.172
tx_rate_mbps	Unknown
throughput_rx_mbps	1243.244
tx_rate_percent	7.188
throughput_rx_percent	7.188
frame_loss_percent	0.000
min_latency_ns	4480.000
max_latency_ns	3312880.000
avg_latency_ns	128892.500
type	rfc2544
packet_size	128
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	72406
%usr	0.22
%system	1.53
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	4.84
majflt/s	0.00
VSZ	2775652
RSS	12466
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	72405
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1064675.080
tx_rate_mbps	Unknown
throughput_rx_mbps	4360.909
tx_rate_percent	22.656
throughput_rx_percent	22.656
frame_loss_percent	0.000
min_latency_ns	5680.000
max_latency_ns	1100100.000
avg_latency_ns	40866.000
type	rfc2544
packet_size	512
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:



Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	72406
%usr	0.22
%system	1.53
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	4.84
majflt/s	0.00
VSZ	2775652
RSS	12466
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	72405
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1079646.115
tx_rate_mbps	Unknown
throughput_rx_mbps	8844.461
tx_rate_percent	45.086
throughput_rx_percent	45.086
frame_loss_percent	0.000
min_latency_ns	6140.000
max_latency_ns	1630000.000
avg_latency_ns	50164.000
type	rfc2544
packet_size	1024
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	72406
%usr	0.22
%system	1.53
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	4.84
majflt/s	0.00
VSZ	2775652
RSS	12466
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	72405
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	1047171.424
tx_rate_mbps	Unknown
throughput_rx_mbps	12716.850
tx_rate_percent	64.422
throughput_rx_percent	64.422
frame_loss_percent	0.000
min_latency_ns	6940.000
max_latency_ns	1082960.000
avg_latency_ns	38101.500
type	rfc2544
packet_size	1518
traffic_type	udp
stream_count	8000
match_type	L4
pre-installed_flows	No

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	72406
%usr	0.22
%system	1.53
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	4.84
majflt/s	0.00
VSZ	2775652
RSS	12466
%MEM	0.02
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	72405
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45764
RSS	2988
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.2.5 Test ID: PVP\_TPUT

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- VNF: QemuVirtioNet, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvp\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: pvp
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	526436.747
tx_rate_mbps	Unknown
throughput_rx_mbps	269.536
tx_rate_percent	1.773
throughput_rx_percent	1.769
frame_loss_percent	0.260
min_latency_ns	14480.000
max_latency_ns	27666900.000
avg_latency_ns	67528.500
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	75252
%usr	0.20
%system	1.27
%guest	0.00
%CPU	1.46
CPU	.
minflt/s	4.69
majflt/s	0.00
VSZ	2775648
RSS	7965
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	75251
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	75415
%usr	0.00
%system	0.72
%guest	199.23
%CPU	99.99
CPU	.
minflt/s	0.50
majflt/s	0.00
VSZ	4825477
RSS	39744
%MEM	0.06
kB_rd/s	0.02
kB_wr/s	8.26
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	299565.641
tx_rate_mbps	Unknown
throughput_rx_mbps	306.755
tx_rate_percent	1.773
throughput_rx_percent	1.773
frame_loss_percent	0.001
min_latency_ns	17220.000
max_latency_ns	1384420.000
avg_latency_ns	50920.000
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	75252
%usr	0.20
%system	1.27
%guest	0.00
%CPU	1.46
CPU	.
minflt/s	4.69
majflt/s	0.00
VSZ	2775648
RSS	7965
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00



Process: ovsdb-server	
Statistic	Value
UID	0
PID	75251
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	75415
%usr	0.00
%system	0.72
%guest	199.23
%CPU	99.99
CPU	.
minflt/s	0.50
majflt/s	0.00
VSZ	4825477
RSS	39744
%MEM	0.06
kB_rd/s	0.02
kB_wr/s	8.26
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	265067.046
tx_rate_mbps	Unknown
throughput_rx_mbps	1085.715
tx_rate_percent	5.641
throughput_rx_percent	5.641
frame_loss_percent	0.000
min_latency_ns	34040.000
max_latency_ns	337100.000
avg_latency_ns	117124.500
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	75252
%usr	0.20
%system	1.27
%guest	0.00
%CPU	1.46
CPU	.
minflt/s	4.69
majflt/s	0.00
VSZ	2775648
RSS	7965
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	75251
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	75415
%usr	0.00
%system	0.72
%guest	199.23
%CPU	99.99
CPU	.
minflt/s	0.50
majflt/s	0.00
VSZ	4825477
RSS	39744
%MEM	0.06
kB_rd/s	0.02
kB_wr/s	8.26
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	264719.313
tx_rate_mbps	Unknown
throughput_rx_mbps	2168.581
tx_rate_percent	11.055
throughput_rx_percent	11.055
frame_loss_percent	0.000
min_latency_ns	43420.000
max_latency_ns	393660.000
avg_latency_ns	114282.500
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	75252
%usr	0.20
%system	1.27
%guest	0.00
%CPU	1.46
CPU	.
minflt/s	4.69
majflt/s	0.00
VSZ	2775648
RSS	7965
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	75251
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	75415
%usr	0.00
%system	0.72
%guest	199.23
%CPU	99.99
CPU	.
minflt/s	0.50
majflt/s	0.00
VSZ	4825477
RSS	39744
%MEM	0.06
kB_rd/s	0.02
kB_wr/s	8.26
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	267697.431
tx_rate_mbps	Unknown
throughput_rx_mbps	3250.918
tx_rate_percent	16.469
throughput_rx_percent	16.469
frame_loss_percent	0.000
min_latency_ns	41060.000
max_latency_ns	610600.000
avg_latency_ns	117025.500
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	75252
%usr	0.20
%system	1.27
%guest	0.00
%CPU	1.46
CPU	.
minflt/s	4.69
majflt/s	0.00
VSZ	2775648
RSS	7965
%MEM	0.01
kB_rd/s	0.00
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	75251
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	75415
%usr	0.00
%system	0.72
%guest	199.23
%CPU	99.99
CPU	.
minflt/s	0.50
majflt/s	0.00
VSZ	4825477
RSS	39744
%MEM	0.06
kB_rd/s	0.02
kB_wr/s	8.26
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.2.6 Test ID: PVP\_BACK2BACK

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- VNF: QemuVirtioNet, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvp\_back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: pvp
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.



**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswhd	
Statistic	Value
UID	0
PID	78307
%usr	0.19
%system	1.29
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.45
majflt/s	0.00
VSZ	2775644
RSS	17638
%MEM	0.03
kB_rd/s	0.03
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	78306
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	78471
%usr	0.00
%system	0.06
%guest	199.95
%CPU	100.02
CPU	.
minflt/s	1.71
majflt/s	0.00
VSZ	4834884
RSS	38120
%MEM	0.06
kB_rd/s	0.51
kB_wr/s	71.63
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	78307
%usr	0.19
%system	1.29
%guest	0.00
%CPU	1.48
CPU	•
minflt/s	4.45
majflt/s	0.00
VSZ	2775644
RSS	17638
%MEM	0.03
kB_rd/s	0.03
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	78306
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	78471
%usr	0.00
%system	0.06
%guest	199.95
%CPU	100.02
CPU	.
minflt/s	1.71
majflt/s	0.00
VSZ	4834884
RSS	38120
%MEM	0.06
kB_rd/s	0.51
kB_wr/s	71.63
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	78307
%usr	0.19
%system	1.29
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.45
majflt/s	0.00
VSZ	2775644
RSS	17638
%MEM	0.03
kB_rd/s	0.03
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	78306
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	78471
%usr	0.00
%system	0.06
%guest	199.95
%CPU	100.02
CPU	.
minflt/s	1.71
majflt/s	0.00
VSZ	4834884
RSS	38120
%MEM	0.06
kB_rd/s	0.51
kB_wr/s	71.63
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	78307
%usr	0.19
%system	1.29
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.45
majflt/s	0.00
VSZ	2775644
RSS	17638
%MEM	0.03
kB_rd/s	0.03
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	78306
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	78471
%usr	0.00
%system	0.06
%guest	199.95
%CPU	100.02
CPU	.
minflt/s	1.71
majflt/s	0.00
VSZ	4834884
RSS	38120
%MEM	0.06
kB_rd/s	0.51
kB_wr/s	71.63
kB_ccwr/s	0.00

**Test results for packet size: 1518**

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:



Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	78307
%usr	0.19
%system	1.29
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.45
majflt/s	0.00
VSZ	2775644
RSS	17638
%MEM	0.03
kB_rd/s	0.03
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	78306
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	78471
%usr	0.00
%system	0.06
%guest	199.95
%CPU	100.02
CPU	.
minflt/s	1.71
majflt/s	0.00
VSZ	4834884
RSS	38120
%MEM	0.06
kB_rd/s	0.51
kB_wr/s	71.63
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

### 4.2.7 Test ID: PVVP\_TPUT

#### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB

- Virtual Switch Set-up: pvvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- VNF: QemuVirtioNet, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvvp\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: pvvp
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	448949.780
tx_rate_mbps	Unknown
throughput_rx_mbps	229.862
tx_rate_percent	1.773
throughput_rx_percent	1.508
frame_loss_percent	14.940
min_latency_ns	37460.000
max_latency_ns	23426560.000
avg_latency_ns	794932.500
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	82671
%usr	0.20
%system	1.28
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.71
majflt/s	0.00
VSZ	2775744
RSS	17131
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.02
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	82670
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	83011
%usr	0.00
%system	1.09
%guest	198.86
%CPU	99.99
CPU	.
minflt/s	0.53
majflt/s	0.00
VSZ	4846676
RSS	36195
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	9.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	82895
%usr	0.00
%system	1.30
%guest	198.70
%CPU	100.00
CPU	.
minflt/s	0.62
majflt/s	0.00
VSZ	4772944
RSS	37376
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.05
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	299568.942
tx_rate_mbps	Unknown
throughput_rx_mbps	306.759
tx_rate_percent	1.773
throughput_rx_percent	1.773
frame_loss_percent	0.000
min_latency_ns	23640.000
max_latency_ns	1073500.000
avg_latency_ns	78252.500
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	82671
%usr	0.20
%system	1.28
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.71
majflt/s	0.00
VSZ	2775744
RSS	17131
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.02
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	82670
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	83011
%usr	0.00
%system	1.09
%guest	198.86
%CPU	99.99
CPU	.
minflt/s	0.53
majflt/s	0.00
VSZ	4846676
RSS	36195
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	9.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	82895
%usr	0.00
%system	1.30
%guest	198.70
%CPU	100.00
CPU	.
minflt/s	0.62
majflt/s	0.00
VSZ	4772944
RSS	37376
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.05
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	265067.468
tx_rate_mbps	Unknown
throughput_rx_mbps	1085.716
tx_rate_percent	5.641
throughput_rx_percent	5.641
frame_loss_percent	0.000
min_latency_ns	54160.000
max_latency_ns	1181500.000
avg_latency_ns	146416.500
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:



Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	82671
%usr	0.20
%system	1.28
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.71
majflt/s	0.00
VSZ	2775744
RSS	17131
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.02
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	82670
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	83011
%usr	0.00
%system	1.09
%guest	198.86
%CPU	99.99
CPU	.
minflt/s	0.53
majflt/s	0.00
VSZ	4846676
RSS	36195
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	9.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	82895
%usr	0.00
%system	1.30
%guest	198.70
%CPU	100.00
CPU	.
minflt/s	0.62
majflt/s	0.00
VSZ	4772944
RSS	37376
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.05
kB_ccwr/s	0.00

**Test results for packet size: 1024**

A detailed summary of the main results is outlined below.

**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	264720.241
tx_rate_mbps	Unknown
throughput_rx_mbps	2168.588
tx_rate_percent	11.055
throughput_rx_percent	11.055
frame_loss_percent	0.000
min_latency_ns	43940.000
max_latency_ns	1496660.000
avg_latency_ns	158828.500
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	82671
%usr	0.20
%system	1.28
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.71
majflt/s	0.00
VSZ	2775744
RSS	17131
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.02
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	82670
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	83011
%usr	0.00
%system	1.09
%guest	198.86
%CPU	99.99
CPU	.
minflt/s	0.53
majflt/s	0.00
VSZ	4846676
RSS	36195
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	9.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	82895
%usr	0.00
%system	1.30
%guest	198.70
%CPU	100.00
CPU	.
minflt/s	0.62
majflt/s	0.00
VSZ	4772944
RSS	37376
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.05
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
tx_rate_fps	Unknown
throughput_rx_fps	292842.564
tx_rate_mbps	Unknown
throughput_rx_mbps	3556.280
tx_rate_percent	18.016
throughput_rx_percent	18.016
frame_loss_percent	0.000
min_latency_ns	52420.000
max_latency_ns	1576900.000
avg_latency_ns	172858.500
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	82671
%usr	0.20
%system	1.28
%guest	0.00
%CPU	1.48
CPU	.
minflt/s	4.71
majflt/s	0.00
VSZ	2775744
RSS	17131
%MEM	0.03
kB_rd/s	0.00
kB_wr/s	0.02
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	82670
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45868
RSS	3200
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	83011
%usr	0.00
%system	1.09
%guest	198.86
%CPU	99.99
CPU	.
minflt/s	0.53
majflt/s	0.00
VSZ	4846676
RSS	36195
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	9.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	82895
%usr	0.00
%system	1.30
%guest	198.70
%CPU	100.00
CPU	.
minflt/s	0.62
majflt/s	0.00
VSZ	4772944
RSS	37376
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.05
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.2.8 Test ID: PVVP\_BACK2BACK

### Test Environment

Below is the environment that the test was performed in:

- OS: centos 7.2.1511 Core
- Kernel Version: 3.10.0-327.13.1.el7.x86\_64
- **NIC(s):**
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
  - Intel Corporation 82599ES 10-Gigabit SFI/SFP+ Network Connection (rev 01)
- Board: Intel Corporation S2600WTT [2 sockets]
- CPU: Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
- CPU cores: 72
- Memory: 65696348 kB
- Virtual Switch Set-up: pvvp
- vswitchperf: GIT tag: 22ffe5b07adeb514572dc3db8b435ef4107e348b
- Traffic Generator: IxNet, Version: 8.01.1029.6, GIT tag: None
- vSwitch: OvsVanilla, Version: 2.5.90, GIT tag: 02ab4b1a6a173979a51cabd7000a34546d517e60
- VNF: QemuVirtioNet, Version: 2.3.0, GIT tag: e5b3a24181ea0cebf1c5b20f44d016311b7048f0
- **VM images:**
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
  - /home/jenkins/vloop-vnf-ubuntu-14.04\_20160303.qcow2
- **VM loopback apps:**
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab
  - testpmd, Version: 2.2.0, GIT tag: a38e5ec15e3fe615b94f3cc5edca5974dab325ab

Below are test details:

- Test ID: pvvp\_back2back
- Description: LTD.Throughput.RFC2544.BackToBackFrames
- Deployment: pvvp
- Traffic type: rfc2544
- Bidirectional : True

### Test results for packet size: 64

A detailed summary of the main results is outlined below.



**Results/Metrics Collected**

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	64
traffic_type	udp
guest_loopback_app	testpmd testpmd

**Statistics collected**

The following system statistics were collected during testcase execution:

Process: ovs-vswhdchd	
Statistic	Value
UID	0
PID	86019
%usr	0.19
%system	1.25
%guest	0.00
%CPU	1.44
CPU	.
minflt/s	4.55
majflt/s	0.00
VSZ	2775751
RSS	27190
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	86018
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86276
%usr	0.00
%system	0.05
%guest	199.90
%CPU	99.99
CPU	.
minflt/s	0.37
majflt/s	0.00
VSZ	4837452
RSS	47572
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	6.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86243
%usr	0.00
%system	0.06
%guest	200.05
%CPU	99.99
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4766284
RSS	45248
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 128

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	128
traffic_type	udp
guest_loopback_app	testpmd testpmd

#### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	86019
%usr	0.19
%system	1.25
%guest	0.00
%CPU	1.44
CPU	.
minflt/s	4.55
majflt/s	0.00
VSZ	2775751
RSS	27190
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	86018
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86276
%usr	0.00
%system	0.05
%guest	199.90
%CPU	99.99
CPU	.
minflt/s	0.37
majflt/s	0.00
VSZ	4837452
RSS	47572
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	6.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86243
%usr	0.00
%system	0.06
%guest	200.05
%CPU	99.99
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4766284
RSS	45248
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 512

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	512
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswhchd	
Statistic	Value
UID	0
PID	86019
%usr	0.19
%system	1.25
%guest	0.00
%CPU	1.44
CPU	•
minflt/s	4.55
majflt/s	0.00
VSZ	2775751
RSS	27190
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	86018
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86276
%usr	0.00
%system	0.05
%guest	199.90
%CPU	99.99
CPU	.
minflt/s	0.37
majflt/s	0.00
VSZ	4837452
RSS	47572
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	6.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86243
%usr	0.00
%system	0.06
%guest	200.05
%CPU	99.99
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4766284
RSS	45248
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1024

A detailed summary of the main results is outlined below.

### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	1024
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	86019
%usr	0.19
%system	1.25
%guest	0.00
%CPU	1.44
CPU	•
minflt/s	4.55
majflt/s	0.00
VSZ	2775751
RSS	27190
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	86018
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00



Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86276
%usr	0.00
%system	0.05
%guest	199.90
%CPU	99.99
CPU	.
minflt/s	0.37
majflt/s	0.00
VSZ	4837452
RSS	47572
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	6.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86243
%usr	0.00
%system	0.06
%guest	200.05
%CPU	99.99
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4766284
RSS	45248
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

### Test results for packet size: 1518

A detailed summary of the main results is outlined below.

#### Results/Metrics Collected

The following are the metrics obtained during this test:

Metric	Result
b2b_frames	0
b2b_frame_loss_percent	100
type	rfc2544
packet_size	1518
traffic_type	udp
guest_loopback_app	testpmd testpmd

### Statistics collected

The following system statistics were collected during testcase execution:

Process: ovs-vswitchd	
Statistic	Value
UID	0
PID	86019
%usr	0.19
%system	1.25
%guest	0.00
%CPU	1.44
CPU	•
minflt/s	4.55
majflt/s	0.00
VSZ	2775751
RSS	27190
%MEM	0.04
kB_rd/s	0.05
kB_wr/s	0.01
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	86018
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3208
%MEM	0.00
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86276
%usr	0.00
%system	0.05
%guest	199.90
%CPU	99.99
CPU	.
minflt/s	0.37
majflt/s	0.00
VSZ	4837452
RSS	47572
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	6.19
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86243
%usr	0.00
%system	0.06
%guest	200.05
%CPU	99.99
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4766284
RSS	45248
%MEM	0.07
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

## Anomalies

No anomalies were detected during the course of this test.

## Testing Activities/Events

pidstat is used to collect the process statistics, as such some values such as %CPU and %USER maybe > 100% as the values are summed across multiple cores. For more info on pidstat please see: <http://linux.die.net/man/1/pidstat>.

Known issues: Some reported metrics have the value “unkown”. These values are marked unknown as they are not values retrieved from the external tester (traffic generator). They were incorrectly derived in a way that made assumptions about packet sizes, as such they have been deprecated from vsperf and marked as unknown. They will be resolved in the next release.

## 4.3 Rationale for decisions

The tests conducted do not have pass/fail/conditional-pass criteria. The test is simply conducted and the results are reported.

## 4.4 Conclusions and recommendations

The test results are stable. The vsperf CI jobs that were used to obtain the results can be found at [https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-05-07\\_07-08-30/vswitchperf\\_logs\\_2016-05-07\\_07-08-30.tar.gz](https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-05-07_07-08-30/vswitchperf_logs_2016-05-07_07-08-30.tar.gz).

## 4.5 General

### 4.5.1 Glossary

- NFV - Network Function Virtualization
- Mbps - 1,000,000bps

### 4.5.2 Document change procedures and history

Document ID	Author	Date Modified
<i>OPNFV_vswitchperf_LTR_ver_1.0_Jan_15_CN_DRAFT</i>	Christopher Nolan	23/01/2015
<i>OPNFV_vswitchperf_LTR_ver_1.1_Jan_15_CN_DRAFT</i>	Christopher Nolan	28/01/2015