



# VSPERF Results

*Release draft (eca9105)*

**OPNFV**

April 29, 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\_TPUP**

#### **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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	22626032.390
tx_rate_mbps	Unknown
throughput_rx_mbps	11584.529
tx_rate_percent	76.023
throughput_rx_percent	76.023
frame_loss_percent	0.000
min_latency_ns	5120.000
max_latency_ns	190360.000
avg_latency_ns	8125.000
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	68790
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.37
majflt/s	0.00
VSZ	4143372
RSS	20575
%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	68791
%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	16630610.495
tx_rate_mbps	Unknown
throughput_rx_mbps	17029.745
tx_rate_percent	98.453
throughput_rx_percent	98.453
frame_loss_percent	0.000
min_latency_ns	6480.000
max_latency_ns	268580.000
avg_latency_ns	10654.500
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	68790
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.37
majflt/s	0.00
VSZ	4143372
RSS	20575
%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	68791
%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	4699185.555
tx_rate_mbps	Unknown
throughput_rx_mbps	19247.864
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	23880.000
max_latency_ns	64740.000
avg_latency_ns	51588.000
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	68790
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.37
majflt/s	0.00
VSZ	4143372
RSS	20575
%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	68791
%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	2394556.290
tx_rate_mbps	Unknown
throughput_rx_mbps	19616.205
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	29100.000
max_latency_ns	190760.000
avg_latency_ns	55405.500
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	68790
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.37
majflt/s	0.00
VSZ	4143372
RSS	20575
%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	68791
%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	1625471.019
tx_rate_mbps	Unknown
throughput_rx_mbps	19739.720
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	21020.000
max_latency_ns	54160.000
avg_latency_ns	39888.000
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	68790
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	20.37
majflt/s	0.00
VSZ	4143372
RSS	20575
%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	68791
%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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	27673
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	70825
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	13.23
majflt/s	0.00
VSZ	4143372
RSS	22591
%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	70824
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
b2b_frames	2969277
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	70825
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	13.23
majflt/s	0.00
VSZ	4143372
RSS	22591
%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	70824
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
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-vsitchd	
Statistic	Value
UID	0
PID	70825
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	13.23
majflt/s	0.00
VSZ	4143372
RSS	22591
%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	70824
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
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	70825
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	13.23
majflt/s	0.00
VSZ	4143372
RSS	22591
%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	70824
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
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	70825
%usr	199.94
%system	0.07
%guest	0.00
%CPU	200.00
CPU	•
minflt/s	13.23
majflt/s	0.00
VSZ	4143372
RSS	22591
%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	70824
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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.

### 3.2.3 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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	8205495.909
tx_rate_mbps	Unknown
throughput_rx_mbps	4463.790
tx_rate_percent	55.141
throughput_rx_percent	57.767
frame_loss_percent	0.000
min_latency_ns	4380.000
max_latency_ns	258100.000
avg_latency_ns	7613.000
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	73600
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	16.16
majflt/s	0.00
VSZ	4143372
RSS	24641
%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	73599
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	7792713.957
tx_rate_mbps	Unknown
throughput_rx_mbps	8229.106
tx_rate_percent	92.266
throughput_rx_percent	94.759
frame_loss_percent	0.000
min_latency_ns	4980.000
max_latency_ns	36940.000
avg_latency_ns	5929.000
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	73600
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	16.16
majflt/s	0.00
VSZ	4143372
RSS	24641
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	73599
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	2331452.011
tx_rate_mbps	Unknown
throughput_rx_mbps	9624.234
tx_rate_percent	99.227
throughput_rx_percent	99.973
frame_loss_percent	0.000
min_latency_ns	5620.000
max_latency_ns	40920.000
avg_latency_ns	13654.000
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	73600
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	16.16
majflt/s	0.00
VSZ	4143372
RSS	24641
%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	73599
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	1188058.271
tx_rate_mbps	Unknown
throughput_rx_mbps	9770.591
tx_rate_percent	99.227
throughput_rx_percent	99.607
frame_loss_percent	0.000
min_latency_ns	5740.000
max_latency_ns	36300.000
avg_latency_ns	7212.000
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	73600
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	16.16
majflt/s	0.00
VSZ	4143372
RSS	24641
%MEM	0.04
kB_rd/s	0.00
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	73599
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	806458.209
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	205460.000
avg_latency_ns	7594.000
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	73600
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	16.16
majflt/s	0.00
VSZ	4143372
RSS	24641
%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	73599
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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.

## 3.2.4 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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	19173303.365
tx_rate_mbps	Unknown
throughput_rx_mbps	9816.731
tx_rate_percent	64.422
throughput_rx_percent	64.422
frame_loss_percent	0.000
min_latency_ns	5120.000
max_latency_ns	661540.000
avg_latency_ns	7463.000
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	76535
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	26.32
majflt/s	0.00
VSZ	4143372
RSS	20558
%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	76534
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	16761273.362
tx_rate_mbps	Unknown
throughput_rx_mbps	17163.544
tx_rate_percent	99.227
throughput_rx_percent	99.227
frame_loss_percent	0.000
min_latency_ns	5260.000
max_latency_ns	411160.000
avg_latency_ns	11087.500
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	76535
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	26.32
majflt/s	0.00
VSZ	4143372
RSS	20558
%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	76534
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	4699155.136
tx_rate_mbps	Unknown
throughput_rx_mbps	19247.739
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	21820.000
max_latency_ns	86140.000
avg_latency_ns	68764.500
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	76535
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	26.32
majflt/s	0.00
VSZ	4143372
RSS	20558
%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	76534
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	2394600.811
tx_rate_mbps	Unknown
throughput_rx_mbps	19616.570
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	39940.000
max_latency_ns	84860.000
avg_latency_ns	71862.000
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	76535
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	26.32
majflt/s	0.00
VSZ	4143372
RSS	20558
%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	76534
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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	1625465.682
tx_rate_mbps	Unknown
throughput_rx_mbps	19739.655
tx_rate_percent	100
throughput_rx_percent	100
frame_loss_percent	0.000
min_latency_ns	32880.000
max_latency_ns	74180.000
avg_latency_ns	61124.000
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	76535
%usr	199.93
%system	0.07
%guest	0.00
%CPU	200.00
CPU	.
minflt/s	26.32
majflt/s	0.00
VSZ	4143372
RSS	20558
%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	76534
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	3980639.285
tx_rate_mbps	Unknown
throughput_rx_mbps	2038.087
tx_rate_percent	13.375
throughput_rx_percent	13.375
frame_loss_percent	0.000
min_latency_ns	8980.000
max_latency_ns	190920.000
avg_latency_ns	18498.000
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	78698
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	4.73
majflt/s	0.00
VSZ	20920592
RSS	25659
%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	78697
%usr	0.01
%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	78822
%usr	0.00
%system	0.00
%guest	199.94
%CPU	99.99
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4830148
RSS	63057
%MEM	0.10
kB_rd/s	0.18
kB_wr/s	8.47
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	2389938.955
tx_rate_mbps	Unknown
throughput_rx_mbps	2447.297
tx_rate_percent	14.148
throughput_rx_percent	14.148
frame_loss_percent	0.000
min_latency_ns	7640.000
max_latency_ns	134680.000
avg_latency_ns	12191.500
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	78698
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	4.73
majflt/s	0.00
VSZ	20920592
RSS	25659
%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	78697
%usr	0.01
%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	78822
%usr	0.00
%system	0.00
%guest	199.94
%CPU	99.99
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4830148
RSS	63057
%MEM	0.10
kB_rd/s	0.18
kB_wr/s	8.47
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	2373097.572
tx_rate_mbps	Unknown
throughput_rx_mbps	9720.208
tx_rate_percent	50.500
throughput_rx_percent	50.500
frame_loss_percent	0.000
min_latency_ns	9300.000
max_latency_ns	171880.000
avg_latency_ns	52147.000
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	78698
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	4.73
majflt/s	0.00
VSZ	20920592
RSS	25659
%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	78697
%usr	0.01
%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	78822
%usr	0.00
%system	0.00
%guest	199.94
%CPU	99.99
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4830148
RSS	63057
%MEM	0.10
kB_rd/s	0.18
kB_wr/s	8.47
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	1801902.279
tx_rate_mbps	Unknown
throughput_rx_mbps	14761.183
tx_rate_percent	75.250
throughput_rx_percent	75.250
frame_loss_percent	0.000
min_latency_ns	10440.000
max_latency_ns	214720.000
avg_latency_ns	131834.000
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	78698
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	4.73
majflt/s	0.00
VSZ	20920592
RSS	25659
%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	78697
%usr	0.01
%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	78822
%usr	0.00
%system	0.00
%guest	199.94
%CPU	99.99
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4830148
RSS	63057
%MEM	0.10
kB_rd/s	0.18
kB_wr/s	8.47
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	1260892.352
tx_rate_mbps	Unknown
throughput_rx_mbps	15312.277
tx_rate_percent	77.570
throughput_rx_percent	77.570
frame_loss_percent	0.000
min_latency_ns	15020.000
max_latency_ns	802840.000
avg_latency_ns	123175.000
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	78698
%usr	199.95
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	4.73
majflt/s	0.00
VSZ	20920592
RSS	25659
%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	78697
%usr	0.01
%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	78822
%usr	0.00
%system	0.00
%guest	199.94
%CPU	99.99
CPU	.
minflt/s	0.96
majflt/s	0.00
VSZ	4830148
RSS	63057
%MEM	0.10
kB_rd/s	0.18
kB_wr/s	8.47
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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	8514
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	81908
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	14.44
majflt/s	0.00
VSZ	20920588
RSS	22632
%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	81907
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
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	82042
%usr	0.00
%system	0.01
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	1.15
majflt/s	0.00
VSZ	4848580
RSS	110994
%MEM	0.17
kB_rd/s	0.04
kB_wr/s	5.26
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
b2b_frames	6282
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	81908
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.01
CPU	•
minflt/s	14.44
majflt/s	0.00
VSZ	20920588
RSS	22632
%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	81907
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	47708
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	82042
%usr	0.00
%system	0.01
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	1.15
majflt/s	0.00
VSZ	4848580
RSS	110994
%MEM	0.17
kB_rd/s	0.04
kB_wr/s	5.26
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
b2b_frames	5377
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	81908
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	14.44
majflt/s	0.00
VSZ	20920588
RSS	22632
%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	81907
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
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	82042
%usr	0.00
%system	0.01
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	1.15
majflt/s	0.00
VSZ	4848580
RSS	110994
%MEM	0.17
kB_rd/s	0.04
kB_wr/s	5.26
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
b2b_frames	13702
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	81908
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	14.44
majflt/s	0.00
VSZ	20920588
RSS	22632
%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	81907
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
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	82042
%usr	0.00
%system	0.01
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	1.15
majflt/s	0.00
VSZ	4848580
RSS	110994
%MEM	0.17
kB_rd/s	0.04
kB_wr/s	5.26
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
b2b_frames	18974
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	81908
%usr	199.94
%system	0.06
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	14.44
majflt/s	0.00
VSZ	20920588
RSS	22632
%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	81907
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47708
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	82042
%usr	0.00
%system	0.01
%guest	199.94
%CPU	100.00
CPU	.
minflt/s	1.15
majflt/s	0.00
VSZ	4848580
RSS	110994
%MEM	0.17
kB_rd/s	0.04
kB_wr/s	5.26
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.

### 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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	1908943.452
tx_rate_mbps	Unknown
throughput_rx_mbps	977.379
tx_rate_percent	6.414
throughput_rx_percent	6.414
frame_loss_percent	0.000
min_latency_ns	12680.000
max_latency_ns	282080.000
avg_latency_ns	58521.500
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	86695
%usr	199.95
%system	0.05
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.69
majflt/s	0.00
VSZ	37697768
RSS	20665
%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	86694
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
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	86940
%usr	0.00
%system	0.06
%guest	199.96
%CPU	100.05
CPU	.
minflt/s	1.81
majflt/s	0.00
VSZ	5272264
RSS	40769
%MEM	0.06
kB_rd/s	0.53
kB_wr/s	101.02
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86833
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	2.42
majflt/s	0.00
VSZ	4765648
RSS	62782
%MEM	0.10
kB_rd/s	0.03
kB_wr/s	0.58
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	1606048.034
tx_rate_mbps	Unknown
throughput_rx_mbps	1644.593
tx_rate_percent	9.508
throughput_rx_percent	9.508
frame_loss_percent	0.000
min_latency_ns	20440.000
max_latency_ns	833680.000
avg_latency_ns	111896.500
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	86695
%usr	199.95
%system	0.05
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.69
majflt/s	0.00
VSZ	37697768
RSS	20665
%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	86694
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
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	86940
%usr	0.00
%system	0.06
%guest	199.96
%CPU	100.05
CPU	.
minflt/s	1.81
majflt/s	0.00
VSZ	5272264
RSS	40769
%MEM	0.06
kB_rd/s	0.53
kB_wr/s	101.02
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86833
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	2.42
majflt/s	0.00
VSZ	4765648
RSS	62782
%MEM	0.10
kB_rd/s	0.03
kB_wr/s	0.58
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	1137363.714
tx_rate_mbps	Unknown
throughput_rx_mbps	4658.642
tx_rate_percent	24.203
throughput_rx_percent	24.203
frame_loss_percent	0.000
min_latency_ns	22960.000
max_latency_ns	659540.000
avg_latency_ns	145687.500
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	86695
%usr	199.95
%system	0.05
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.69
majflt/s	0.00
VSZ	37697768
RSS	20665
%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	86694
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
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	86940
%usr	0.00
%system	0.06
%guest	199.96
%CPU	100.05
CPU	.
minflt/s	1.81
majflt/s	0.00
VSZ	5272264
RSS	40769
%MEM	0.06
kB_rd/s	0.53
kB_wr/s	101.02
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86833
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	2.42
majflt/s	0.00
VSZ	4765648
RSS	62782
%MEM	0.10
kB_rd/s	0.03
kB_wr/s	0.58
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	1005558.546
tx_rate_mbps	Unknown
throughput_rx_mbps	8237.536
tx_rate_percent	41.992
throughput_rx_percent	41.992
frame_loss_percent	0.000
min_latency_ns	17480.000
max_latency_ns	2614140.000
avg_latency_ns	158161.500
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	86695
%usr	199.95
%system	0.05
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.69
majflt/s	0.00
VSZ	37697768
RSS	20665
%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	86694
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
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	86940
%usr	0.00
%system	0.06
%guest	199.96
%CPU	100.05
CPU	.
minflt/s	1.81
majflt/s	0.00
VSZ	5272264
RSS	40769
%MEM	0.06
kB_rd/s	0.53
kB_wr/s	101.02
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86833
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	2.42
majflt/s	0.00
VSZ	4765648
RSS	62782
%MEM	0.10
kB_rd/s	0.03
kB_wr/s	0.58
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	820851.150
tx_rate_mbps	Unknown
throughput_rx_mbps	9968.416
tx_rate_percent	50.500
throughput_rx_percent	50.500
frame_loss_percent	0.000
min_latency_ns	23380.000
max_latency_ns	895700.000
avg_latency_ns	149674.500
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	86695
%usr	199.95
%system	0.05
%guest	0.00
%CPU	200.01
CPU	.
minflt/s	16.69
majflt/s	0.00
VSZ	37697768
RSS	20665
%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	86694
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	47712
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	86940
%usr	0.00
%system	0.06
%guest	199.96
%CPU	100.05
CPU	.
minflt/s	1.81
majflt/s	0.00
VSZ	5272264
RSS	40769
%MEM	0.06
kB_rd/s	0.53
kB_wr/s	101.02
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	86833
%usr	0.00
%system	0.03
%guest	199.96
%CPU	99.99
CPU	.
minflt/s	2.42
majflt/s	0.00
VSZ	4765648
RSS	62782
%MEM	0.10
kB_rd/s	0.03
kB_wr/s	0.58
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-pod3/2016-04-29\\_14-28-54/vswitchperf\\_logs\\_2016-04-29\\_14-28-54.tar.gz](https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-04-29_14-28-54/vswitchperf_logs_2016-04-29_14-28-54.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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	988190.030
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	4380.000
max_latency_ns	2303000.000
avg_latency_ns	36308.000
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	90647
%usr	0.24
%system	1.50
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	3.92
majflt/s	0.00
VSZ	2775560
RSS	13275
%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	90646
%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	1083457.110
tx_rate_mbps	Unknown
throughput_rx_mbps	1109.460
tx_rate_percent	6.414
throughput_rx_percent	6.414
frame_loss_percent	0.000
min_latency_ns	4340.000
max_latency_ns	6068760.000
avg_latency_ns	159344.000
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	90647
%usr	0.24
%system	1.50
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	3.92
majflt/s	0.00
VSZ	2775560
RSS	13275
%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	90646
%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	773908.173
tx_rate_mbps	Unknown
throughput_rx_mbps	3169.928
tx_rate_percent	16.469
throughput_rx_percent	16.469
frame_loss_percent	0.000
min_latency_ns	5680.000
max_latency_ns	2931460.000
avg_latency_ns	60662.500
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	90647
%usr	0.24
%system	1.50
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	3.92
majflt/s	0.00
VSZ	2775560
RSS	13275
%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	90646
%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	783308.741
tx_rate_mbps	Unknown
throughput_rx_mbps	6416.865
tx_rate_percent	32.711
throughput_rx_percent	32.711
frame_loss_percent	0.000
min_latency_ns	6380.000
max_latency_ns	1019980.000
avg_latency_ns	48206.500
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	90647
%usr	0.24
%system	1.50
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	3.92
majflt/s	0.00
VSZ	2775560
RSS	13275
%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	90646
%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	808299.611
tx_rate_mbps	Unknown
throughput_rx_mbps	9815.990
tx_rate_percent	49.727
throughput_rx_percent	49.727
frame_loss_percent	0.000
min_latency_ns	6960.000
max_latency_ns	1742120.000
avg_latency_ns	55873.000
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	90647
%usr	0.24
%system	1.50
%guest	0.00
%CPU	1.74
CPU	.
minflt/s	3.92
majflt/s	0.00
VSZ	2775560
RSS	13275
%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	90646
%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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	93623
%usr	0.22
%system	1.47
%guest	0.00
%CPU	1.69
CPU	.
minflt/s	3.79
majflt/s	0.00
VSZ	2775560
RSS	15654
%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	93622
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
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	93623
%usr	0.22
%system	1.47
%guest	0.00
%CPU	1.69
CPU	•
minflt/s	3.79
majflt/s	0.00
VSZ	2775560
RSS	15654
%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	93622
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
b2b_frames	1613
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	93623
%usr	0.22
%system	1.47
%guest	0.00
%CPU	1.69
CPU	•
minflt/s	3.79
majflt/s	0.00
VSZ	2775560
RSS	15654
%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	93622
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
b2b_frames	1370
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	93623
%usr	0.22
%system	1.47
%guest	0.00
%CPU	1.69
CPU	.
minflt/s	3.79
majflt/s	0.00
VSZ	2775560
RSS	15654
%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	93622
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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
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	93623
%usr	0.22
%system	1.47
%guest	0.00
%CPU	1.69
CPU	•
minflt/s	3.79
majflt/s	0.00
VSZ	2775560
RSS	15654
%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	93622
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
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.

### 4.2.3 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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	609189.457
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	4280.000
max_latency_ns	3939280.000
avg_latency_ns	87288.000
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	97888
%usr	0.23
%system	1.54
%guest	0.00
%CPU	1.77
CPU	.
minflt/s	10.37
majflt/s	0.00
VSZ	2775564
RSS	15176
%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	97887
%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	607052.717
tx_rate_mbps	Unknown
throughput_rx_mbps	641.048
tx_rate_percent	7.188
throughput_rx_percent	7.382
frame_loss_percent	0.000
min_latency_ns	4500.000
max_latency_ns	2757300.000
avg_latency_ns	139742.000
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	97888
%usr	0.23
%system	1.54
%guest	0.00
%CPU	1.77
CPU	.
minflt/s	10.37
majflt/s	0.00
VSZ	2775564
RSS	15176
%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	97887
%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	568682.933
tx_rate_mbps	Unknown
throughput_rx_mbps	2347.523
tx_rate_percent	24.203
throughput_rx_percent	24.385
frame_loss_percent	0.000
min_latency_ns	5460.000
max_latency_ns	2348880.000
avg_latency_ns	148467.000
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	97888
%usr	0.23
%system	1.54
%guest	0.00
%CPU	1.77
CPU	.
minflt/s	10.37
majflt/s	0.00
VSZ	2775564
RSS	15176
%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	97887
%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	539822.383
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	6000.000
max_latency_ns	1251060.000
avg_latency_ns	66332.000
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	97888
%usr	0.23
%system	1.54
%guest	0.00
%CPU	1.77
CPU	.
minflt/s	10.37
majflt/s	0.00
VSZ	2775564
RSS	15176
%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	97887
%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	536157.668
tx_rate_mbps	Unknown
throughput_rx_mbps	6528.256
tx_rate_percent	65.969
throughput_rx_percent	66.140
frame_loss_percent	0.000
min_latency_ns	6460.000
max_latency_ns	1221660.000
avg_latency_ns	60599.000
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	97888
%usr	0.23
%system	1.54
%guest	0.00
%CPU	1.77
CPU	.
minflt/s	10.37
majflt/s	0.00
VSZ	2775564
RSS	15176
%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	97887
%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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	988189.702
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	4340.000
max_latency_ns	3055860.000
avg_latency_ns	44937.500
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	100758
%usr	0.22
%system	1.44
%guest	0.00
%CPU	1.66
CPU	.
minflt/s	4.80
majflt/s	0.00
VSZ	2775564
RSS	14863
%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	100757
%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	952809.249
tx_rate_mbps	Unknown
throughput_rx_mbps	975.677
tx_rate_percent	5.641
throughput_rx_percent	5.641
frame_loss_percent	0.000
min_latency_ns	4560.000
max_latency_ns	2906320.000
avg_latency_ns	59038.000
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	100758
%usr	0.22
%system	1.44
%guest	0.00
%CPU	1.66
CPU	.
minflt/s	4.80
majflt/s	0.00
VSZ	2775564
RSS	14863
%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	100757
%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	810254.292
tx_rate_mbps	Unknown
throughput_rx_mbps	3318.802
tx_rate_percent	17.242
throughput_rx_percent	17.242
frame_loss_percent	0.000
min_latency_ns	5640.000
max_latency_ns	2394980.000
avg_latency_ns	56438.500
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	100758
%usr	0.22
%system	1.44
%guest	0.00
%CPU	1.66
CPU	.
minflt/s	4.80
majflt/s	0.00
VSZ	2775564
RSS	14863
%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	100757
%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	801829.968
tx_rate_mbps	Unknown
throughput_rx_mbps	6568.591
tx_rate_percent	33.484
throughput_rx_percent	33.484
frame_loss_percent	0.000
min_latency_ns	6380.000
max_latency_ns	1847200.000
avg_latency_ns	55832.000
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	100758
%usr	0.22
%system	1.44
%guest	0.00
%CPU	1.66
CPU	.
minflt/s	4.80
majflt/s	0.00
VSZ	2775564
RSS	14863
%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	100757
%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	758010.982
tx_rate_mbps	Unknown
throughput_rx_mbps	9205.285
tx_rate_percent	46.633
throughput_rx_percent	46.633
frame_loss_percent	0.000
min_latency_ns	6960.000
max_latency_ns	1945040.000
avg_latency_ns	57757.500
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	100758
%usr	0.22
%system	1.44
%guest	0.00
%CPU	1.66
CPU	.
minflt/s	4.80
majflt/s	0.00
VSZ	2775564
RSS	14863
%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	100757
%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.



## 4.2.5 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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	525395.303
tx_rate_mbps	Unknown
throughput_rx_mbps	269.002
tx_rate_percent	1.773
throughput_rx_percent	1.765
frame_loss_percent	0.458
min_latency_ns	17900.000
max_latency_ns	31753200.000
avg_latency_ns	89162.000
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	103678
%usr	0.21
%system	1.32
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	4.32
majflt/s	0.00
VSZ	2775560
RSS	13950
%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	103677
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3212
%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	103840
%usr	0.00
%system	0.75
%guest	199.23
%CPU	100.01
CPU	.
minflt/s	1.26
majflt/s	0.00
VSZ	4845660
RSS	45227
%MEM	0.07
kB_rd/s	1.06
kB_wr/s	60.25
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	299484.410
tx_rate_mbps	Unknown
throughput_rx_mbps	306.672
tx_rate_percent	1.773
throughput_rx_percent	1.773
frame_loss_percent	0.028
min_latency_ns	16640.000
max_latency_ns	3474480.000
avg_latency_ns	85640.500
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	103678
%usr	0.21
%system	1.32
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	4.32
majflt/s	0.00
VSZ	2775560
RSS	13950
%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	103677
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3212
%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	103840
%usr	0.00
%system	0.75
%guest	199.23
%CPU	100.01
CPU	.
minflt/s	1.26
majflt/s	0.00
VSZ	4845660
RSS	45227
%MEM	0.07
kB_rd/s	1.06
kB_wr/s	60.25
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	301412.466
tx_rate_mbps	Unknown
throughput_rx_mbps	1234.585
tx_rate_percent	6.414
throughput_rx_percent	6.414
frame_loss_percent	0.000
min_latency_ns	38740.000
max_latency_ns	402840.000
avg_latency_ns	130337.000
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	103678
%usr	0.21
%system	1.32
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	4.32
majflt/s	0.00
VSZ	2775560
RSS	13950
%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	103677
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3212
%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	103840
%usr	0.00
%system	0.75
%guest	199.23
%CPU	100.01
CPU	.
minflt/s	1.26
majflt/s	0.00
VSZ	4845660
RSS	45227
%MEM	0.07
kB_rd/s	1.06
kB_wr/s	60.25
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	283240.622
tx_rate_mbps	Unknown
throughput_rx_mbps	2320.307
tx_rate_percent	11.828
throughput_rx_percent	11.828
frame_loss_percent	0.000
min_latency_ns	34040.000
max_latency_ns	397460.000
avg_latency_ns	124754.000
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	103678
%usr	0.21
%system	1.32
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	4.32
majflt/s	0.00
VSZ	2775560
RSS	13950
%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	103677
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3212
%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	103840
%usr	0.00
%system	0.75
%guest	199.23
%CPU	100.01
CPU	.
minflt/s	1.26
majflt/s	0.00
VSZ	4845660
RSS	45227
%MEM	0.07
kB_rd/s	1.06
kB_wr/s	60.25
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	267698.300
tx_rate_mbps	Unknown
throughput_rx_mbps	3250.928
tx_rate_percent	16.469
throughput_rx_percent	16.469
frame_loss_percent	0.000
min_latency_ns	42960.000
max_latency_ns	420800.000
avg_latency_ns	115019.500
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	103678
%usr	0.21
%system	1.32
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	4.32
majflt/s	0.00
VSZ	2775560
RSS	13950
%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	103677
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3212
%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	103840
%usr	0.00
%system	0.75
%guest	199.23
%CPU	100.01
CPU	.
minflt/s	1.26
majflt/s	0.00
VSZ	4845660
RSS	45227
%MEM	0.07
kB_rd/s	1.06
kB_wr/s	60.25
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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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	106859
%usr	0.20
%system	1.33
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	5.20
majflt/s	0.00
VSZ	2775560
RSS	14459
%MEM	0.02
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	106858
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45872
RSS	3212
%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	107028
%usr	0.00
%system	0.10
%guest	199.89
%CPU	100.00
CPU	.
minflt/s	2.23
majflt/s	0.00
VSZ	4734036
RSS	50702
%MEM	0.08
kB_rd/s	0.00
kB_wr/s	5.71
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	106859
%usr	0.20
%system	1.33
%guest	0.00
%CPU	1.53
CPU	•
minflt/s	5.20
majflt/s	0.00
VSZ	2775560
RSS	14459
%MEM	0.02
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	106858
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45872
RSS	3212
%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	107028
%usr	0.00
%system	0.10
%guest	199.89
%CPU	100.00
CPU	.
minflt/s	2.23
majflt/s	0.00
VSZ	4734036
RSS	50702
%MEM	0.08
kB_rd/s	0.00
kB_wr/s	5.71
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	106859
%usr	0.20
%system	1.33
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	5.20
majflt/s	0.00
VSZ	2775560
RSS	14459
%MEM	0.02
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	106858
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45872
RSS	3212
%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	107028
%usr	0.00
%system	0.10
%guest	199.89
%CPU	100.00
CPU	.
minflt/s	2.23
majflt/s	0.00
VSZ	4734036
RSS	50702
%MEM	0.08
kB_rd/s	0.00
kB_wr/s	5.71
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	106859
%usr	0.20
%system	1.33
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	5.20
majflt/s	0.00
VSZ	2775560
RSS	14459
%MEM	0.02
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	106858
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45872
RSS	3212
%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	107028
%usr	0.00
%system	0.10
%guest	199.89
%CPU	100.00
CPU	.
minflt/s	2.23
majflt/s	0.00
VSZ	4734036
RSS	50702
%MEM	0.08
kB_rd/s	0.00
kB_wr/s	5.71
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	106859
%usr	0.20
%system	1.33
%guest	0.00
%CPU	1.53
CPU	.
minflt/s	5.20
majflt/s	0.00
VSZ	2775560
RSS	14459
%MEM	0.02
kB_rd/s	0.05
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovssdb-server	
Statistic	Value
UID	0
PID	106858
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.00
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45872
RSS	3212
%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	107028
%usr	0.00
%system	0.10
%guest	199.89
%CPU	100.00
CPU	.
minflt/s	2.23
majflt/s	0.00
VSZ	4734036
RSS	50702
%MEM	0.08
kB_rd/s	0.00
kB_wr/s	5.71
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: pvvvp
- vswitchperf: GIT tag: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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: pvvvp\_tput
- Description: LTD.Throughput.RFC2544.PacketLossRatio
- Deployment: pvvvp
- 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	524520.485
tx_rate_mbps	Unknown
throughput_rx_mbps	268.554
tx_rate_percent	1.773
throughput_rx_percent	1.762
frame_loss_percent	0.624
min_latency_ns	75520.000
max_latency_ns	34935960.000
avg_latency_ns	268447.500
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	111474
%usr	0.21
%system	1.31
%guest	0.00
%CPU	1.52
CPU	.
minflt/s	5.42
majflt/s	0.00
VSZ	2775560
RSS	13694
%MEM	0.02
kB_rd/s	0.15
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	111473
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	2400
%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	111800
%usr	0.00
%system	1.00
%guest	198.94
%CPU	99.99
CPU	.
minflt/s	0.67
majflt/s	0.00
VSZ	4836948
RSS	36483
%MEM	0.06
kB_rd/s	0.01
kB_wr/s	9.25
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	111697
%usr	0.00
%system	1.02
%guest	198.97
%CPU	100.00
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4809292
RSS	36732
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.04
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	299525.121
tx_rate_mbps	Unknown
throughput_rx_mbps	306.714
tx_rate_percent	1.773
throughput_rx_percent	1.773
frame_loss_percent	0.014
min_latency_ns	57000.000
max_latency_ns	1750840.000
avg_latency_ns	190752.000
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	111474
%usr	0.21
%system	1.31
%guest	0.00
%CPU	1.52
CPU	.
minflt/s	5.42
majflt/s	0.00
VSZ	2775560
RSS	13694
%MEM	0.02
kB_rd/s	0.15
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	111473
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	2400
%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	111800
%usr	0.00
%system	1.00
%guest	198.94
%CPU	99.99
CPU	.
minflt/s	0.67
majflt/s	0.00
VSZ	4836948
RSS	36483
%MEM	0.06
kB_rd/s	0.01
kB_wr/s	9.25
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	111697
%usr	0.00
%system	1.02
%guest	198.97
%CPU	100.00
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4809292
RSS	36732
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.04
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	265067.150
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	58000.000
max_latency_ns	520000.000
avg_latency_ns	162123.500
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	111474
%usr	0.21
%system	1.31
%guest	0.00
%CPU	1.52
CPU	.
minflt/s	5.42
majflt/s	0.00
VSZ	2775560
RSS	13694
%MEM	0.02
kB_rd/s	0.15
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	111473
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	2400
%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	111800
%usr	0.00
%system	1.00
%guest	198.94
%CPU	99.99
CPU	.
minflt/s	0.67
majflt/s	0.00
VSZ	4836948
RSS	36483
%MEM	0.06
kB_rd/s	0.01
kB_wr/s	9.25
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	111697
%usr	0.00
%system	1.02
%guest	198.97
%CPU	100.00
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4809292
RSS	36732
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.04
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	264720.262
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	58720.000
max_latency_ns	1282740.000
avg_latency_ns	163183.500
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	111474
%usr	0.21
%system	1.31
%guest	0.00
%CPU	1.52
CPU	.
minflt/s	5.42
majflt/s	0.00
VSZ	2775560
RSS	13694
%MEM	0.02
kB_rd/s	0.15
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	111473
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	2400
%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	111800
%usr	0.00
%system	1.00
%guest	198.94
%CPU	99.99
CPU	.
minflt/s	0.67
majflt/s	0.00
VSZ	4836948
RSS	36483
%MEM	0.06
kB_rd/s	0.01
kB_wr/s	9.25
kB_ccwr/s	0.00



Process: qemu-system-x86	
Statistic	Value
UID	0
PID	111697
%usr	0.00
%system	1.02
%guest	198.97
%CPU	100.00
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4809292
RSS	36732
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.04
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	255125.916
tx_rate_mbps	Unknown
throughput_rx_mbps	3098.249
tx_rate_percent	15.695
throughput_rx_percent	15.695
frame_loss_percent	0.000
min_latency_ns	62480.000
max_latency_ns	1403780.000
avg_latency_ns	166560.500
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	111474
%usr	0.21
%system	1.31
%guest	0.00
%CPU	1.52
CPU	.
minflt/s	5.42
majflt/s	0.00
VSZ	2775560
RSS	13694
%MEM	0.02
kB_rd/s	0.15
kB_wr/s	0.00
kB_ccwr/s	0.00

Process: ovsdb-server	
Statistic	Value
UID	0
PID	111473
%usr	0.01
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	2400
%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	111800
%usr	0.00
%system	1.00
%guest	198.94
%CPU	99.99
CPU	.
minflt/s	0.67
majflt/s	0.00
VSZ	4836948
RSS	36483
%MEM	0.06
kB_rd/s	0.01
kB_wr/s	9.25
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	111697
%usr	0.00
%system	1.02
%guest	198.97
%CPU	100.00
CPU	.
minflt/s	1.10
majflt/s	0.00
VSZ	4809292
RSS	36732
%MEM	0.06
kB_rd/s	0.00
kB_wr/s	0.04
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: eca9105cac5d465dfacf162200e09599c8b98c4b
- 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-vswhd	
Statistic	Value
UID	0
PID	114869
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	.
minflt/s	4.67
majflt/s	0.00
VSZ	2775560
RSS	12209
%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	114868
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3088
%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	115194
%usr	0.00
%system	0.02
%guest	199.93
%CPU	99.99
CPU	.
minflt/s	0.40
majflt/s	0.00
VSZ	4814932
RSS	36090
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	5.68
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	115094
%usr	0.00
%system	0.18
%guest	199.89
%CPU	99.99
CPU	.
minflt/s	0.79
majflt/s	0.00
VSZ	4844112
RSS	35424
%MEM	0.05
kB_rd/s	0.00
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	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	114869
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	.
minflt/s	4.67
majflt/s	0.00
VSZ	2775560
RSS	12209
%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	114868
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	.
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3088
%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	115194
%usr	0.00
%system	0.02
%guest	199.93
%CPU	99.99
CPU	.
minflt/s	0.40
majflt/s	0.00
VSZ	4814932
RSS	36090
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	5.68
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	115094
%usr	0.00
%system	0.18
%guest	199.89
%CPU	99.99
CPU	.
minflt/s	0.79
majflt/s	0.00
VSZ	4844112
RSS	35424
%MEM	0.05
kB_rd/s	0.00
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	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-vswitchd	
Statistic	Value
UID	0
PID	114869
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	4.67
majflt/s	0.00
VSZ	2775560
RSS	12209
%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	114868
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3088
%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	115194
%usr	0.00
%system	0.02
%guest	199.93
%CPU	99.99
CPU	.
minflt/s	0.40
majflt/s	0.00
VSZ	4814932
RSS	36090
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	5.68
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	115094
%usr	0.00
%system	0.18
%guest	199.89
%CPU	99.99
CPU	.
minflt/s	0.79
majflt/s	0.00
VSZ	4844112
RSS	35424
%MEM	0.05
kB_rd/s	0.00
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	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	114869
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	4.67
majflt/s	0.00
VSZ	2775560
RSS	12209
%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	114868
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3088
%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	115194
%usr	0.00
%system	0.02
%guest	199.93
%CPU	99.99
CPU	.
minflt/s	0.40
majflt/s	0.00
VSZ	4814932
RSS	36090
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	5.68
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	115094
%usr	0.00
%system	0.18
%guest	199.89
%CPU	99.99
CPU	.
minflt/s	0.79
majflt/s	0.00
VSZ	4844112
RSS	35424
%MEM	0.05
kB_rd/s	0.00
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	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	114869
%usr	0.22
%system	1.42
%guest	0.00
%CPU	1.64
CPU	•
minflt/s	4.67
majflt/s	0.00
VSZ	2775560
RSS	12209
%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	114868
%usr	0.00
%system	0.00
%guest	0.00
%CPU	0.01
CPU	•
minflt/s	0.00
majflt/s	0.00
VSZ	45876
RSS	3088
%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	115194
%usr	0.00
%system	0.02
%guest	199.93
%CPU	99.99
CPU	.
minflt/s	0.40
majflt/s	0.00
VSZ	4814932
RSS	36090
%MEM	0.05
kB_rd/s	0.00
kB_wr/s	5.68
kB_ccwr/s	0.00

Process: qemu-system-x86	
Statistic	Value
UID	0
PID	115094
%usr	0.00
%system	0.18
%guest	199.89
%CPU	99.99
CPU	.
minflt/s	0.79
majflt/s	0.00
VSZ	4844112
RSS	35424
%MEM	0.05
kB_rd/s	0.00
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.

## 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-pod3/2016-04-29\\_14-28-54/vswitchperf\\_logs\\_2016-04-29\\_14-28-54.tar.gz](https://artifacts.opnfv.org/logs/vswitchperf/intel-pod3/2016-04-29_14-28-54/vswitchperf_logs_2016-04-29_14-28-54.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