

Unicast Packet Loss Report - UDP

Device Tested

WLAN Switch Model:
WLAN Switch Version:
AP Model: FS-AP733C
AP SW Version: V200R008C60B307SP05



Overview

The packet loss test measures the rate at which frames are dropped, as well as the rate at which they are forwarded, by the system under test (SUT) when presented with specific traffic loads and frame sizes.

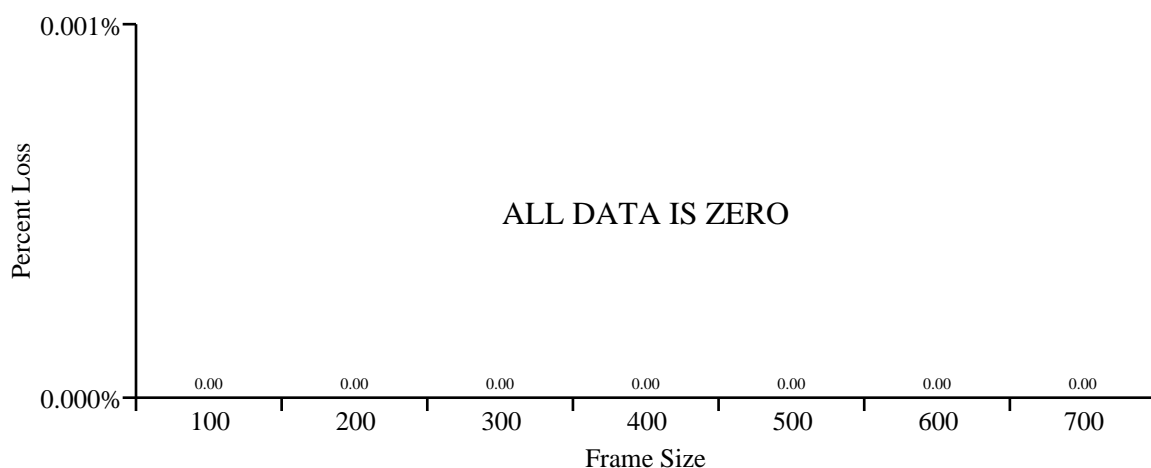
The results of this test are principally useful for characterizing the SUT behavior over a wide range of traffic, rather than for obtaining a single performance number. The test can be run using frame size and intended load sweeps to fully exercise the SUT with all combinations of traffic loads.

Frame Loss Rate

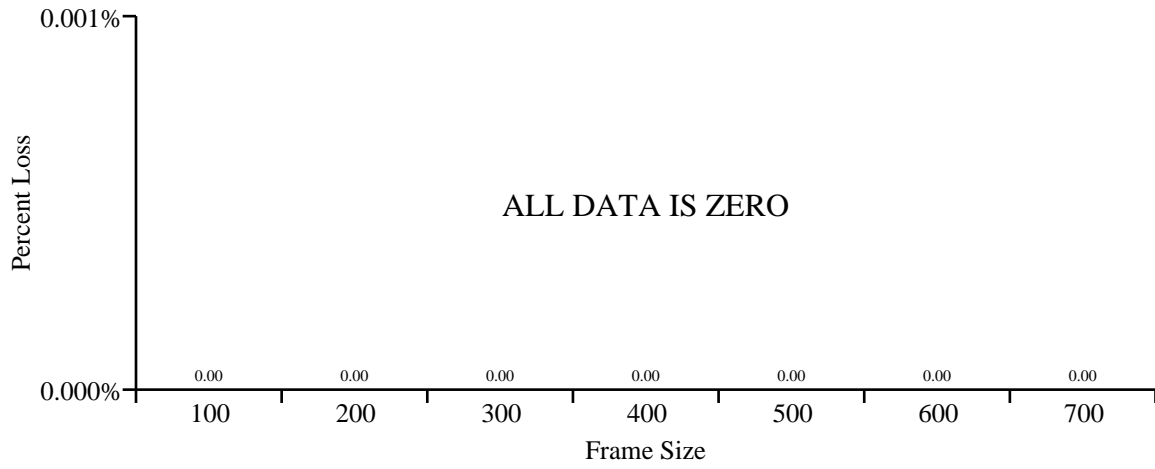
The following graph(s) show the percentage of frames that were dropped by the SUT for the specific combination(s) of intended load (ILOAD) in frames/sec and frame size in bytes. The values are averaged over all the trials. If there are more than 15 frame sizes the graph will represent a sample of the frame sizes only.

Ideally, no frames should be lost until the ILOAD exceeds the theoretical maximum. The relationship between the ILOAD and the theoretical maximum is shown in the next section (forwarding rate graphs).

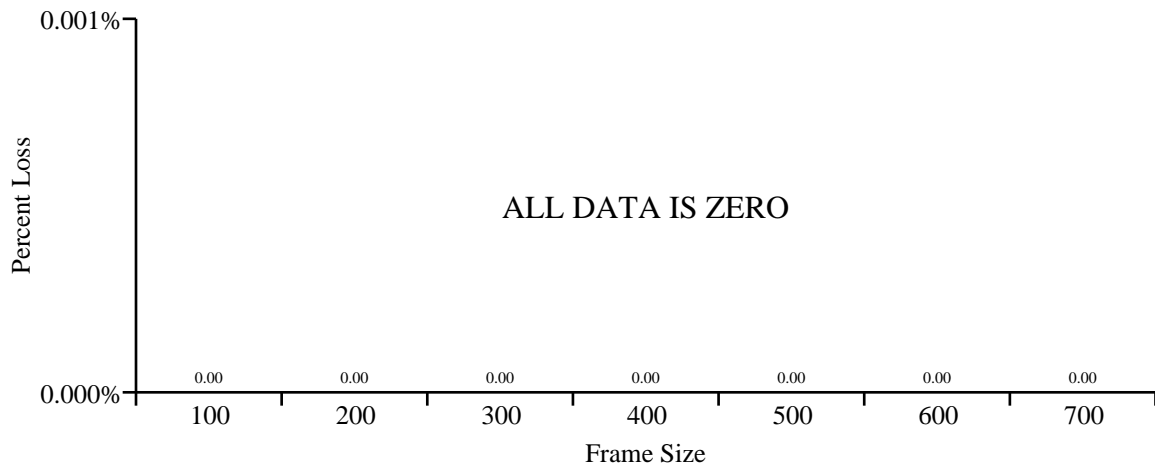
Frame Loss Rate with 700.0 pkts/sec offered



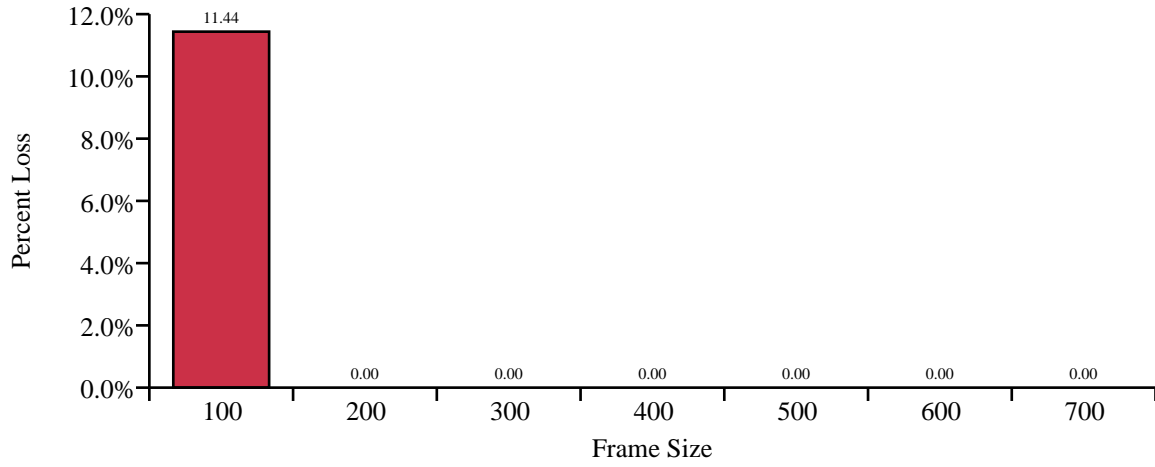
Frame Loss Rate with 600.0 pkts/sec offered



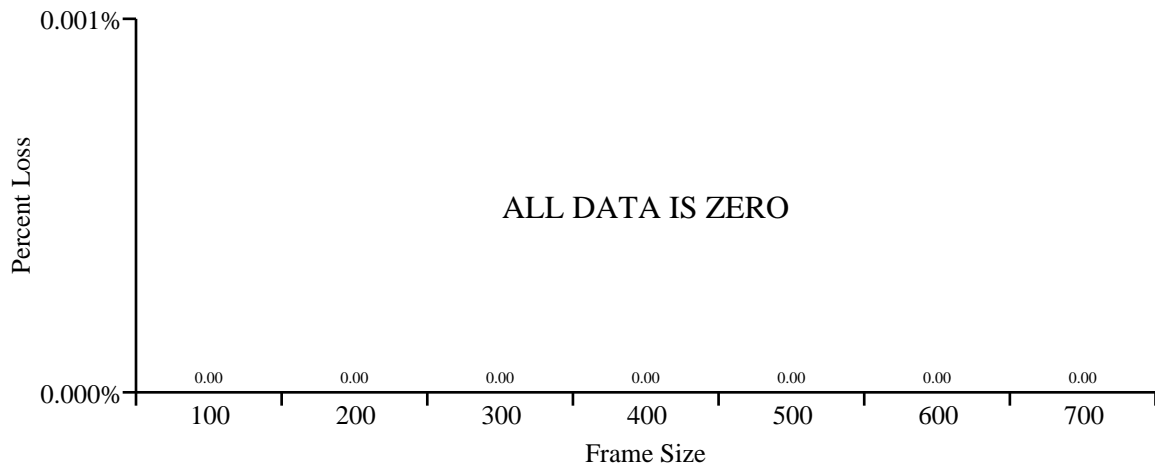
Frame Loss Rate with 500.0 pkts/sec offered



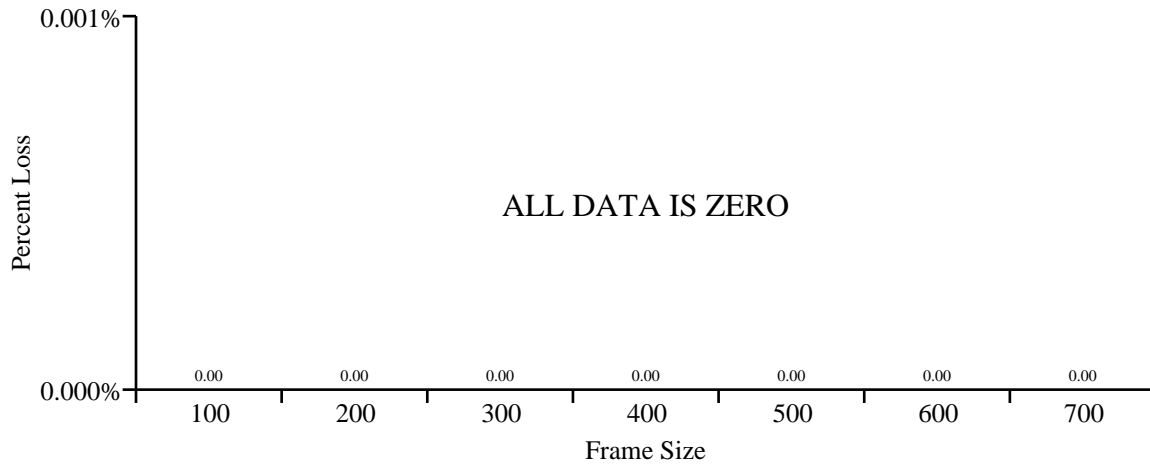
Frame Loss Rate with 400.0 pkts/sec offered



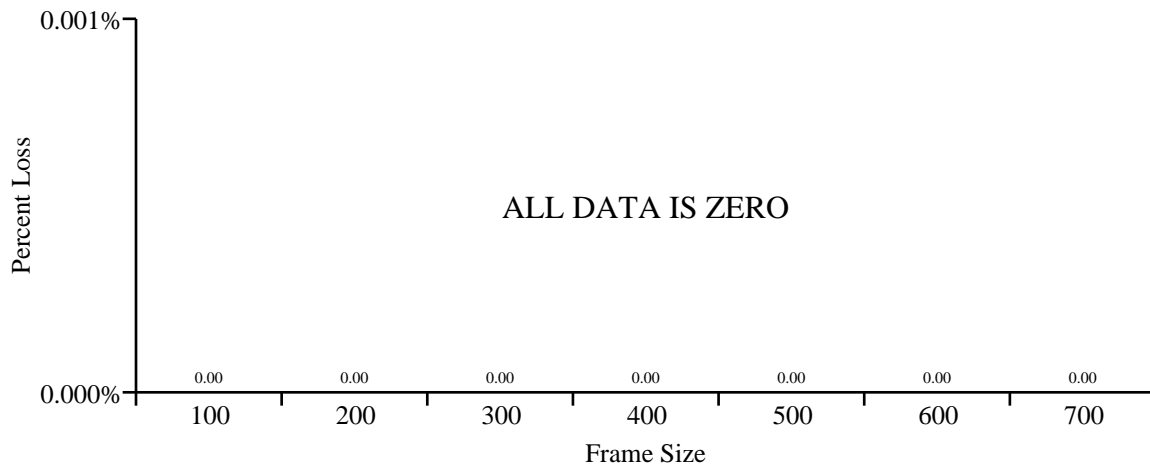
Frame Loss Rate with 300.0 pkts/sec offered



Frame Loss Rate with 200.0 pkts/sec offered



Frame Loss Rate with 100.0 pkts/sec offered

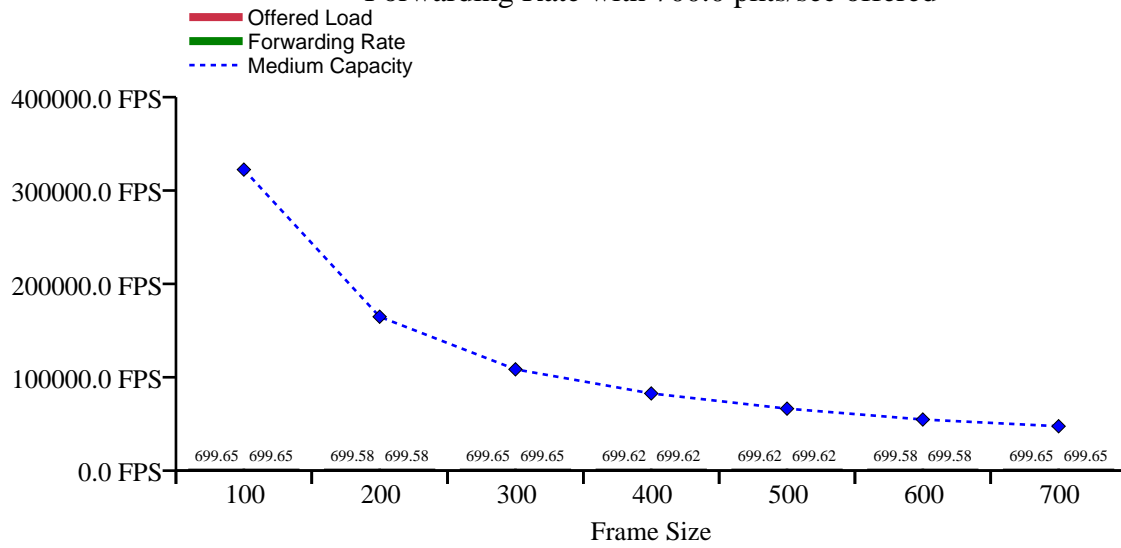


Forwarding Rate

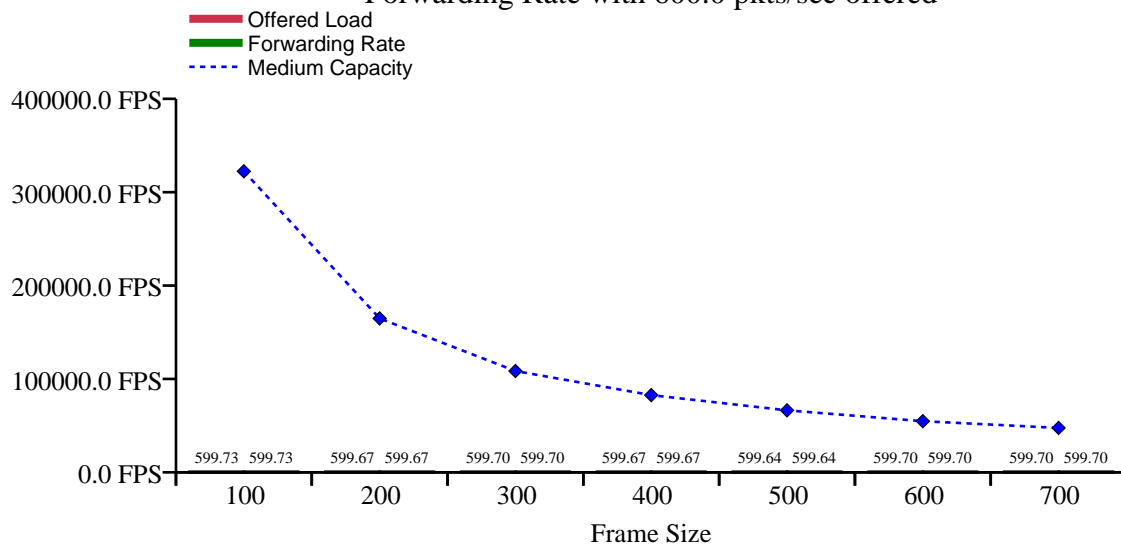
The following graph(s) compares the ILOAD presented to the SUT, versus the rate at which the SUT was able to successfully forward the traffic. The dashed line indicates the theoretical maximum ILOAD, as determined by the physical media. All traffic values are in frames/sec for specific frame sizes in bytes. The values are averaged over all the trial(s). If there are more than 15 frame sizes the graph will represent a sample of the frame sizes only.

Ideally, the forwarding rate should equal the ILOAD whenever the latter is less than or equal to the theoretical maximum. NOTE: For 11n clients the theoretical maximum assumes the Best Effort AC, AIFS_n of 2, and ECWMin of 4.

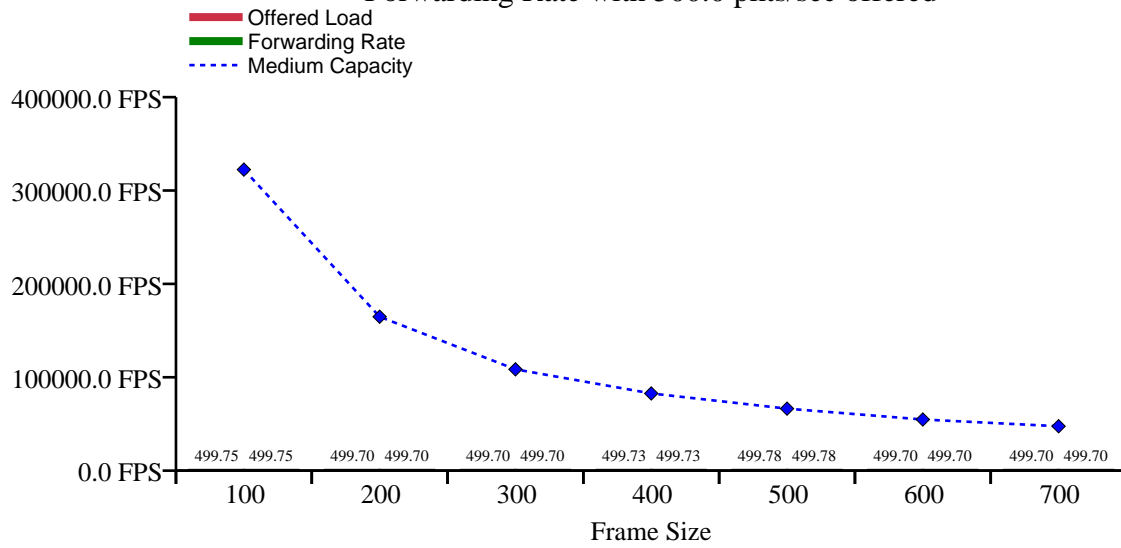
Forwarding Rate with 700.0 pkts/sec offered



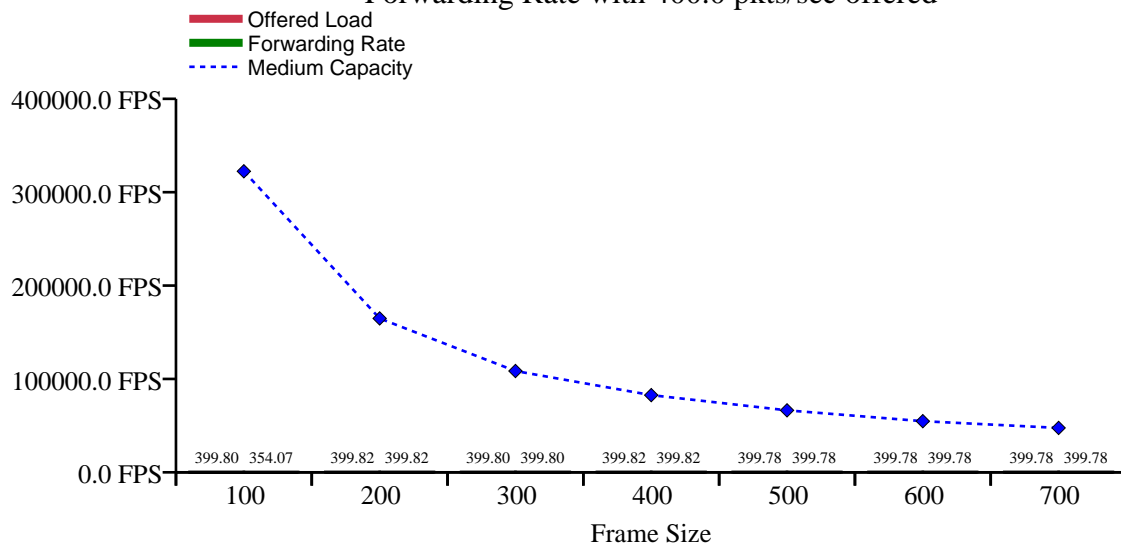
Forwarding Rate with 600.0 pkts/sec offered



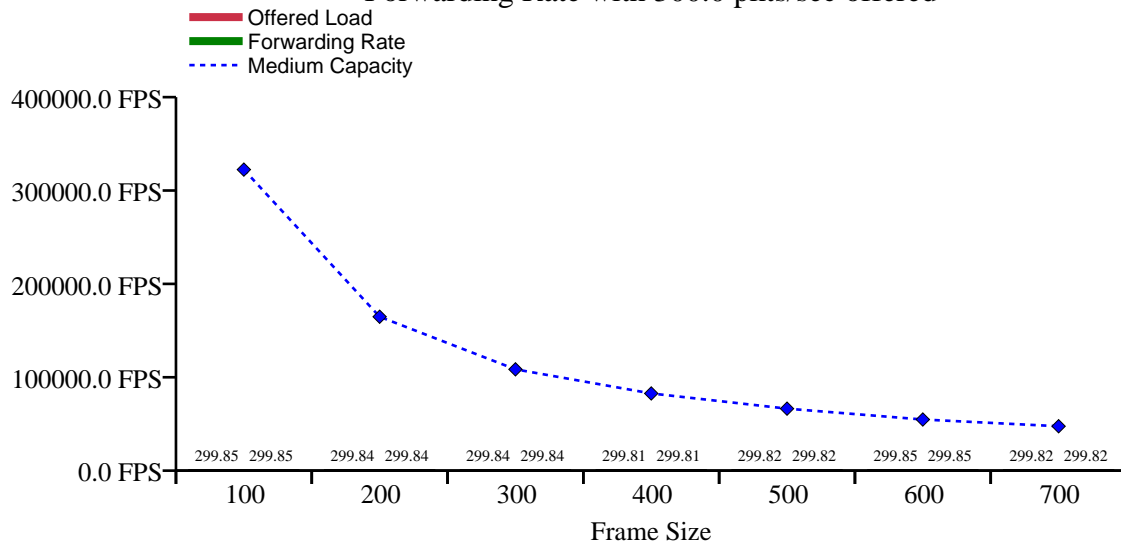
Forwarding Rate with 500.0 pkts/sec offered



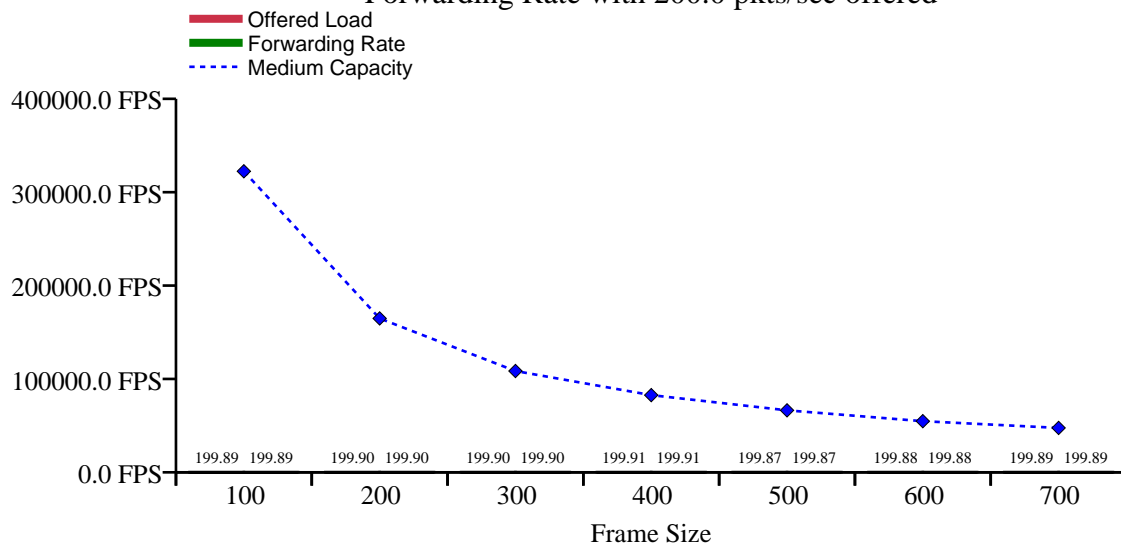
Forwarding Rate with 400.0 pkts/sec offered



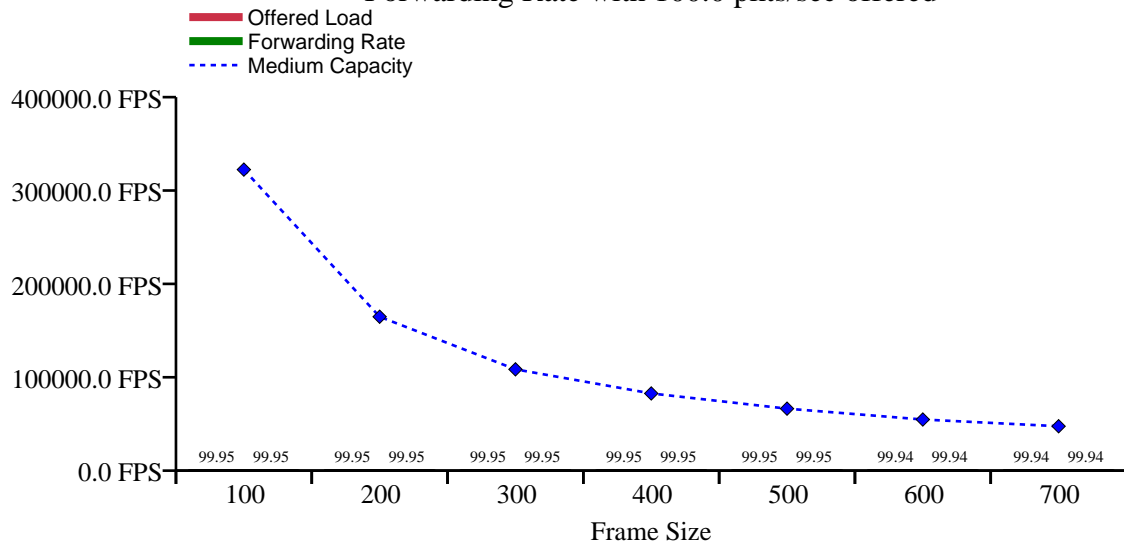
Forwarding Rate with 300.0 pkts/sec offered



Forwarding Rate with 200.0 pkts/sec offered



Forwarding Rate with 100.0 pkts/sec offered



Test Conditions

Parameter	Value	Description
Frame Sizes	[100, 200, 300, 400, 500, 600, 700]	Frame sizes in bytes
ILOAD	[700, 600, 500, 400, 300, 200, 100]	Traffic load, frames/sec

Test Configuration

Parameter	Value	Description
Learning Time	2 sec	Transmission time (seconds) for initial learning packets, to allow the SUT to set up forwarding tables
Transmit Time	20 sec	Trial duration (seconds) - i.e., duration of test traffic
Number of Trials	1	Number of times measurements are repeated for averaging
Settle Time	2 sec	Idle time after test traffic transmission completes
Prefer IPv6 addressing	False	If this flag is enabled and clients has an IPv6 address configured, then generated traffic will use IPv6 addresses. If there is no IPv6 address configured on clients then generated traffic will use IPv4 addresses.

Test Topology

The test topology is shown below. Traffic is transmitted in the direction of the arrows. The test client port identifiers and IP addresses are indicated in the boxes, together with the security mode and channel ID for WLAN clients.



A total of 2 ports were used in this test.

Client Configuration

Client Group	Rx Data MCS	Tx Data MCS	Tx Mgmt. PHY Rate (Mbps)	PHY Rate (Mbps)	IPv6	Port	Adopt Tx Data MCS
Group_001	15	N/A	24.0	300.0	Disabled	192.168.1.111_card2_port1	N/A
Group_002	N/A	N/A	N/A	100	Disabled	192.168.1.111_card1_port1	N/A

Client MAC Configuration

Client Group	PHY Type	A-MPDU	RX A-MSDU	TX A-MSDU (Max, Target)	LDPC	Channel Bandwidth	Guard Interval	Channel Model	Dynamic Bandwidth
Group_001	11n	On	On	On (Auto)	Off	40	short	Bypass	N/A

Client MIMO Configuration

Client Group	MIMO	MU/SU-MIMO
Group_001	2x2	N/A

Client 802.11k Configuration

Client Group	802.11k	Measurements Enabled	Periodicity	Max. Frames
Group_001	Off	None	N/A	N/A

Methodology

The test is performed by associating test clients with the SUT ports, performing any desired learning transmissions, and then generating unidirectional test traffic between the test clients. The test then calculates frame loss rate as defined in RFC 2544, and forwarding rate according to RFC 2285. Proprietary signatures and tags are inserted into the test traffic to ensure accurate measurement results.

The test is repeated for each combination of test conditions (i.e., frame size and ILOAD), and the required number of trials. The results are recorded separately for each trial, as well as being averaged into the graphs shown above.

Detailed Results

Frame Size	ILOAD	Trial	Theoretical Rate pkts/sec	Theoretical Rate kbits/sec	OLOAD	Forwarding Rate pkts/sec	Forwarding Rate kbits/sec	Frame Loss Rate
100	700.0	1	322397	257918	699.7	699.7	560	0.0
100	600.0	1	322397	257918	599.7	599.7	480	0.0
100	500.0	1	322397	257918	499.8	499.8	400	0.0
100	400.0	1	322397	257918	399.8	354.1	283	11.4
100	300.0	1	322397	257918	299.9	299.9	240	0.0
100	200.0	1	322397	257918	199.9	199.9	160	0.0
100	100.0	1	322397	257918	99.9	99.9	80	0.0
200	700.0	1	164815	263704	699.6	699.6	1119	0.0
200	600.0	1	164815	263704	599.7	599.7	959	0.0
200	500.0	1	164815	263704	499.7	499.7	800	0.0
200	400.0	1	164815	263704	399.8	399.8	640	0.0
200	300.0	1	164815	263704	299.8	299.8	480	0.0
200	200.0	1	164815	263704	199.9	199.9	320	0.0
200	100.0	1	164815	263704	99.9	99.9	160	0.0
300	700.0	1	108499	260398	699.7	699.7	1679	0.0
300	600.0	1	108499	260398	599.7	599.7	1439	0.0
300	500.0	1	108499	260398	499.7	499.7	1199	0.0
300	400.0	1	108499	260398	399.8	399.8	960	0.0
300	300.0	1	108499	260398	299.8	299.8	720	0.0
300	200.0	1	108499	260398	199.9	199.9	480	0.0
300	100.0	1	108499	260398	100.0	100.0	240	0.0
400	700.0	1	82665	264531	699.6	699.6	2239	0.0
400	600.0	1	82665	264531	599.7	599.7	1919	0.0
400	500.0	1	82665	264531	499.7	499.7	1599	0.0
400	400.0	1	82665	264531	399.8	399.8	1279	0.0
400	300.0	1	82665	264531	299.8	299.8	959	0.0
400	200.0	1	82665	264531	199.9	199.9	640	0.0
400	100.0	1	82665	264531	99.9	99.9	320	0.0
500	700.0	1	66379	265519	699.6	699.6	2798	0.0
500	600.0	1	66379	265519	599.6	599.6	2399	0.0
500	500.0	1	66379	265519	499.8	499.8	1999	0.0
500	400.0	1	66379	265519	399.8	399.8	1599	0.0
500	300.0	1	66379	265519	299.8	299.8	1199	0.0
500	200.0	1	66379	265519	199.9	199.9	799	0.0

Frame Size	ILOAD	Trial	Theoretical Rate pkts/sec	Theoretical Rate kbits/sec	OLOAD	Forwarding Rate pkts/sec	Forwarding Rate kbits/sec	Frame Loss Rate
500	100.0	1	66379	265519	99.9	99.9	400	0.0
600	700.0	1	54758	262842	699.6	699.6	3358	0.0
600	600.0	1	54758	262842	599.7	599.7	2879	0.0
600	500.0	1	54758	262842	499.7	499.7	2399	0.0
600	400.0	1	54758	262842	399.8	399.8	1919	0.0
600	300.0	1	54758	262842	299.9	299.9	1439	0.0
600	200.0	1	54758	262842	199.9	199.9	959	0.0
600	100.0	1	54758	262842	99.9	99.9	480	0.0
700	700.0	1	47546	266263	699.7	699.7	3918	0.0
700	600.0	1	47546	266263	599.7	599.7	3358	0.0
700	500.0	1	47546	266263	499.7	499.7	2798	0.0
700	400.0	1	47546	266263	399.8	399.8	2239	0.0
700	300.0	1	47546	266263	299.8	299.8	1679	0.0
700	200.0	1	47546	266263	199.9	199.9	1119	0.0
700	100.0	1	47546	266263	99.9	99.9	560	0.0

Access Point Information

The following table shows the SUT details. The received signal strength indication (RSSI) from the SUT is sampled on each port at the start of each trial and averaged over all of the trials.

Port Name	Type	RxAtt*	Chan	BSSID	SSID	RSSI (dBm) A,B,C,D
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -14, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -15, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -15, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A

Port Name	Type	RxAtt*	Chan	BSSID	SSID	RSSI (dBm) A,B,C,D
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -15, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -15, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -15, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A



Port Name	Type	RxAtt*	Chan	BSSID	SSID	RSSI (dBm) A,B,C,D
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -14, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	N/A, -14, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-18, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A
192.168.1.111_card2_port1	80211ac	off	1	02:DD:76:00:DC:83	A1-T	-17, N/A, N/A, N/A

The RSSI is measured at the WaveBlade SMA connector. RSSI values should be between -25 dBm and -35 dBm for port types of 80211 and 80211n ports when the RX attenuation (RxAtt*) option is 'off'. For 80211n port types with attenuation 'on' the RSSI values at the port should be between -5 dBm and -15 dBm. If the RSSI is not in this range, modify the external attenuation to bring it into this range.



Port Configuration

The following table shows the port configuration details like Bandwidth, Channel, Band, CenterFrequency.

PortName	Port Type	Channel	Band	Channel Bandwidth	Center Frequency
192.168.1.111_card2_port1	80211ac	1	2.4 GHz	40 MHz	N/A MHz

Other Information

Results Directory C:\Users\Dell\VeriWave\WaveApps\Results\20201123-141304
WaveApps Version 7.6, 2019.04.02.18-ixia
WaveTest Version 7.6-124-ixi, 2019.04.02.17

Ixia IxVeriWave
8770 SW Nimbus Ave Beaverton, OR 97008
(800) 457-5915 International: (503) 473-8350
<http://www.ixiacom.com/products/ixveriwave>

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