Maximum Client Capacity Report - UDP

Device Tested

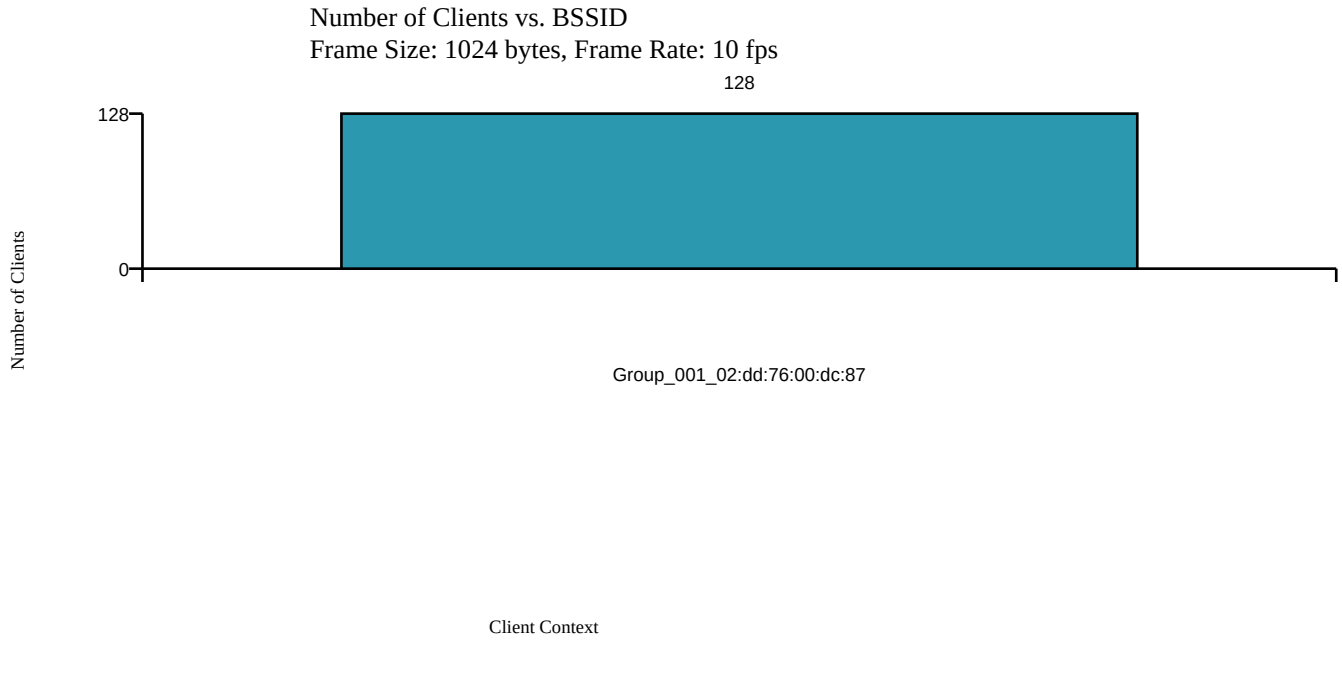
WLAN Switch Model:
WLAN Switch Version:
AP Model: FS-AP1167C
AP SW Version: V200R106C60B202SP01

Overview

The Maximum Client Capacity test measures the number of clients that can successfully associate with APs in the SUT and transfer traffic to the distribution system (wired LAN). It measures the ability of APs in the SUT to support a large number of simultaneously connected users.

Clients Summary

The number of clients graph shows the minimum, maximum and average number of clients across multiple trials that the SUT could handle on a given frame size and intended load with the traffic passing through the SUT within an acceptable loss tolerance of 50%.



Test Conditions

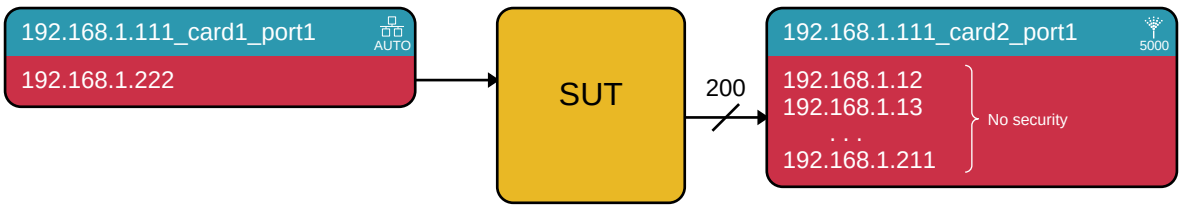
Parameter	Value	Description
ILOAD	10	Intended load in frames/second for each client

Test Configuration

Parameter	Value	Description
Achieved Transmit Time	20 secs	The number of seconds that the WaveTest will transmit for each iteration
Learning Time	2 secs	The number of seconds to transmit frames for the DUT/SUT to populate its forwarding tables
Settle Time	2 secs	The number of seconds to wait for the SUT to finish forwarding frames before making the final measurement
Aging Time	5 secs	The number of seconds the SUT needs to recover between each iteration. Set to a default value of 5 seconds
Number of Trials	1	Number of times the measurement will be repeated. Multiple trials are used for averaging the measurement
Frame Size	1024	MAC frame size used for test traffic in bytes
Initial # of Clients	200	The maximum number of clients that the test shall begin its search from. Unit is in number of clients
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.

Topology and Client Map

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.



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	9	9	54.0	866.7	Disabled	192.168.1.111_card2_port1	Off
Group_002	N/A	N/A	N/A	1000	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	11ac	On	On	On (Auto)	Off	80	short	Bypass	Off

Client MIMO Configuration

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

Client 802.11k Configuration

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

Methodology

This test reports the maximum number of clients that can successfully associate with each AP in the SUT and transfer data. The criterion for a successful association of a client is that it should be able to transfer its share of the aggregate offered load at the pre-determined acceptable loss tolerance of 50%, and remain associated over the duration of the trial.

The test begins by attempting to associate with the selected AP in the SUT a relatively large number of clients. The clients will be connected in a serial fashion up until the point where the AP no longer associates additional clients. The number of connected clients determines the maximum number of associations the AP can achieved.

Once this upper limit has been determined, the test then performs any necessary learning traffic transmission, and then runs test traffic through the selected AP from the clients for the specified transmit duration and at the specified intended load (ILOAD).At the end of the transmit duration, the frame loss rate for each client is calculated; If the frame loss per client falls below the acceptable loss tolerance, the maximum number of clients has been found. If the frame loss per client is higher than the permissible value, then one of the client is disassociated and the test again runs traffic through the SUT and measures frame loss for each client. This process of disassociating clients, running traffic and measurement continues until the frame loss falls below the acceptable loss tolerance, or 10% or more clients have been disassociated.

If there are multiple APs in the SUT, the process described above is done sequentially for each AP. When the test completes, the number of clients for each SUT will be reported as well as the minimum, maximum and average number of clients from all APs in the SUT.

The traffic load presented to the AP is configured to be unidirectional from Ethernet to wireless. The specified ILOAD is applied for each of the wireless clients presented to the SUT. This test can be performed on a SUT with multiple APs, in which case the number of wireless clients will be evenly distributed across

all of the APs.

Specification of an excessive ILOAD (e.g., one that is greater than the aggregate throughput possible with the SUT) can cause this test to never converge, because the traffic loss will then always exceed the acceptable loss tolerance regardless of the number of clients. It is recommended that a throughput or maximum forwarding rate test be performed first on the SUT, and the ILOAD set accordingly.

The measurements are repeated (with the same test conditions and configuration parameter each time) if the number of trials is greater than 1. The detailed results are reported separately for each trial, and averaged into the above chart.

Detailed Results

Frame Size	ILOAD	Trial	Transmit Time sec	Theoretical Rate pkts/sec	Theoretical Rate kbits/sec	OLOAD	Fwd Rate pkts/sec	Fwd Rate kbits/sec	Num Of Clients	Group_BSSID
1024	10.0	1	20.0	101382.0	830521	1280.0	1280.0	10486	128	Group_001_02:dd:76:00:dc:87

The Intended Load (ILOAD) is the number of frames/second intended for each wireless client.The Offered Load (OLOAD) is the aggregate load that is divided evenly among all of the wireless clients that was measured in the test.

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	149	02:DD:76:00:DC:87	A2-T	-31, -32, 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	149	5 GHz	80 MHz	5775 MHz

Other Information

Results Directory	C:\Users\Dell\VeriWave\WaveApps\Results\20201123-170120
WaveApps Version	7.6, 2019.04.02.18-ixia
WaveTest Version	7.6-124-ixi, 2019.04.02.17

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