

VOIP Handset Testing WaveClient Report

October 07, 2009
11:19:45

Device Tested:

AP Model::
AP SW Version::
Client Model::
Client SW Version::

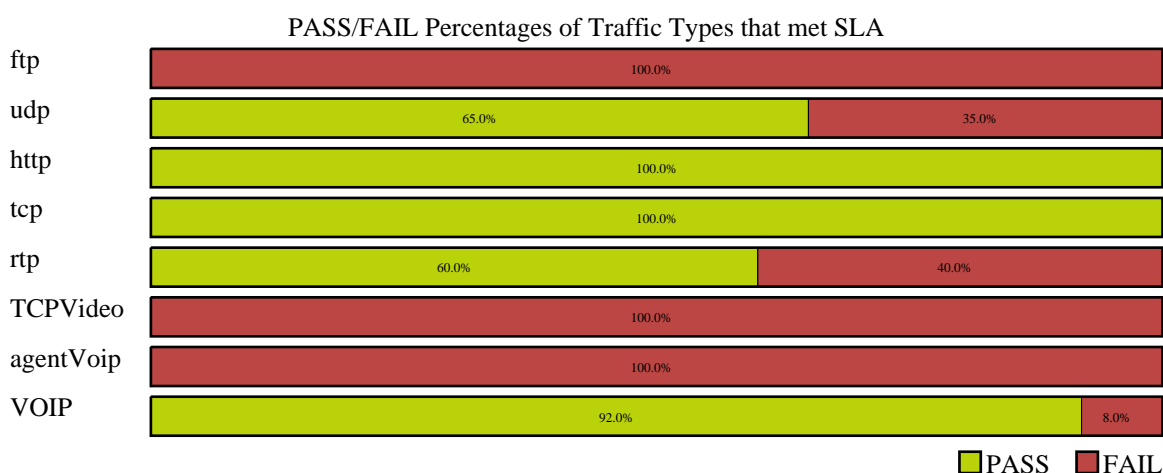


Overview

WaveClient allows wireless device manufacturers to create the actual network eco-system surrounding the device including specific mixes of equipment, applications and traffic conditions in the lab and measure how devices will coexist, how well a system will scale, and how consistently traffic will be prioritized.

Note: The results shown in the report are only of the clients and flows that successfully connected. All client and flows that did not make it through the connection process are not executed in the test and hence excluded from the report.

Result Summary



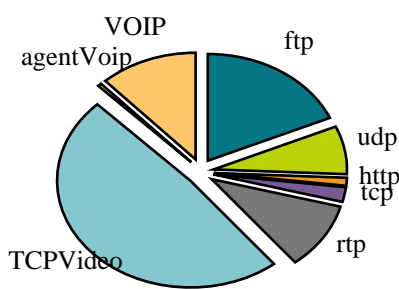
The Table below shows the percentages of Clients/Flows that connected in the test. Only the results of the clients/flows that connected will appear in the report

Type	Value
Successful Client Connections	41 out of 41 (100 %)
Successful TCP/HTTP/FTP Connections	70 out of 70 (100 %)
Successful ARP Exchanges	83 out of 83 (100 %)

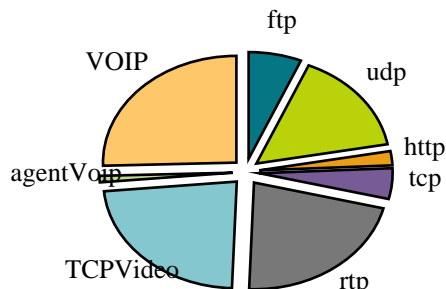
The summary table below shows the per flow average performance measurements of each traffic type

Flow Type	Num Flows	Layer7 Results	ILOAD (Kbps)	OLOAD (Kbps)	Fwd Rate (Kbps)	Latency (msec)	Jitter (msec)	% Packet Loss
VOIP	28	MOS Score: 4.16, R-Value: 83.89	87.2	87.2	81.6	23.3	2.0	6.4
agentVoip	1	MOS Score: 3.64, R-Value: 70.99	94.4	94.4	71.7	65.7	3.4	24.0
ftp	10	File Transfer Time: 224.91 secs, Goodput: 48.2 Kbps	380.0	61.4	-	-	-	13.1
TCPVideo	10	Goodput - 188.49 Kbps	1000.0	220.2	-	-	-	10.6
http	10	Goodput - 15.81 Kbps	25.0	20.6	-	-	-	12.6
tcp	40	Goodput - 5.68 Kbps	11.5	11.1	-	-	-	10.5
udp	20	-	75.2	75.2	69.8	22.9	2.3	7.1
rtp	20	-	104.0	104.0	92.9	45.3	4.2	10.6

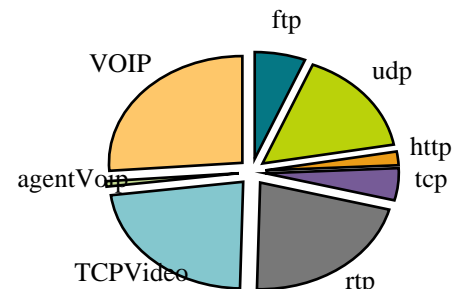
The Total Intended Load is 20.63 Mbps, offered load is 9.59 Mbps and achieved load is 8.72 Mbps



iLoad (Total 20.63 Mbps)

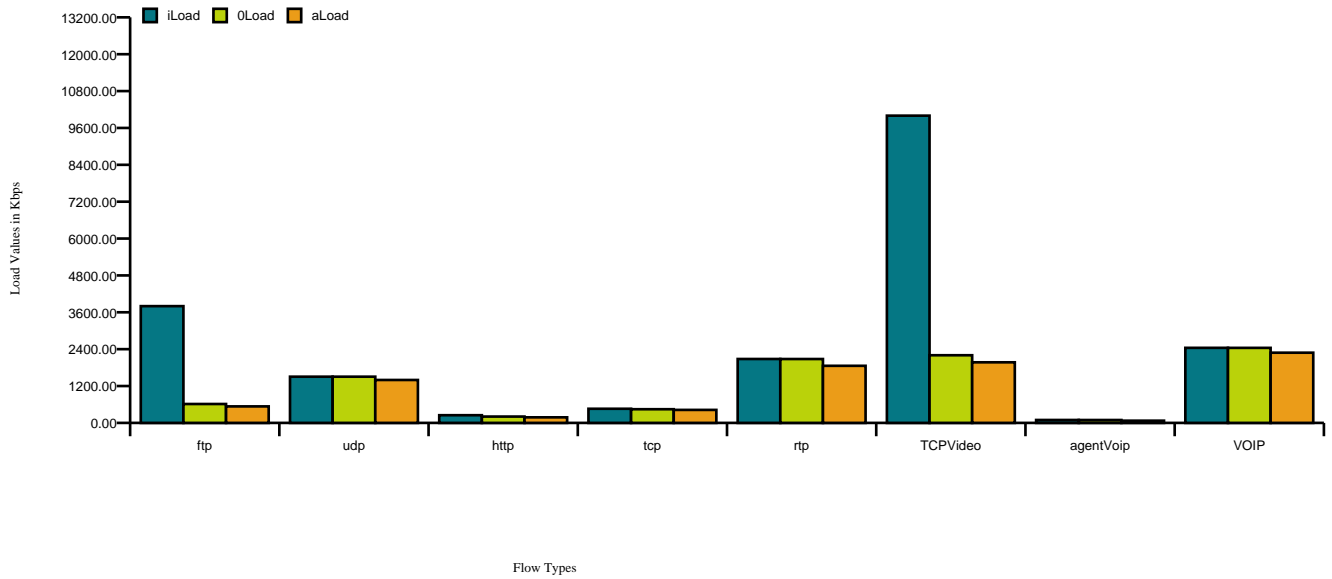


oLoad (Total 9.59 Mbps)

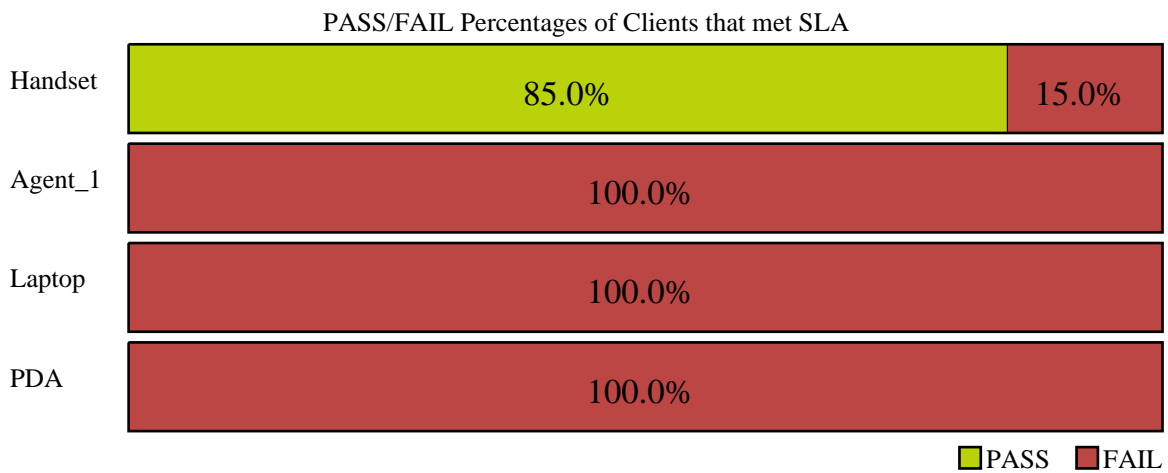


Achieved Load (Total 8.72 Mbps)

iLoad, oLoad and aLoad per Traffic Type



Per Client Type Results

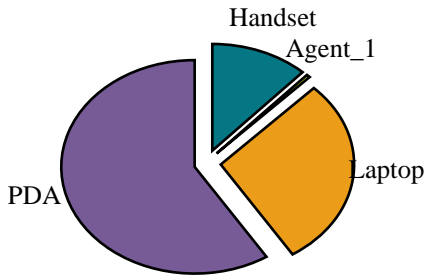


The Table below shows the percentage of Clients of each client type that satisfied the SLA

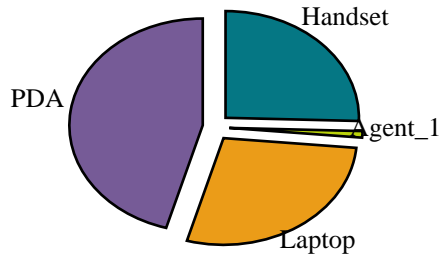
Note: For a client to meet SLA all flows on the client need to meet their SLA

Client Type	Number of Clients	Flow Types	% of Clients that met SLA
Handset	14	VOIP,	85
Agent_1	1	AgentVOIP,	0
Laptop	10	TCP, FTP, HTTP, TCP, TCP, UDP,	0

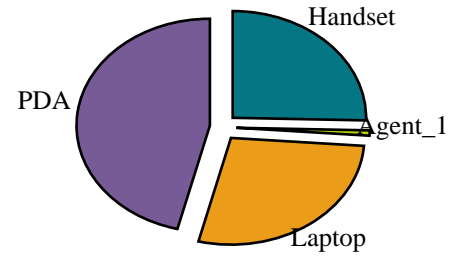
Client Type	Number of Clients	Flow Types	% of Clients that met SLA
PDA	10	RTP, TCP, RTP, TCPVideo,	0



iLoad (Total 20.63 Mbps)

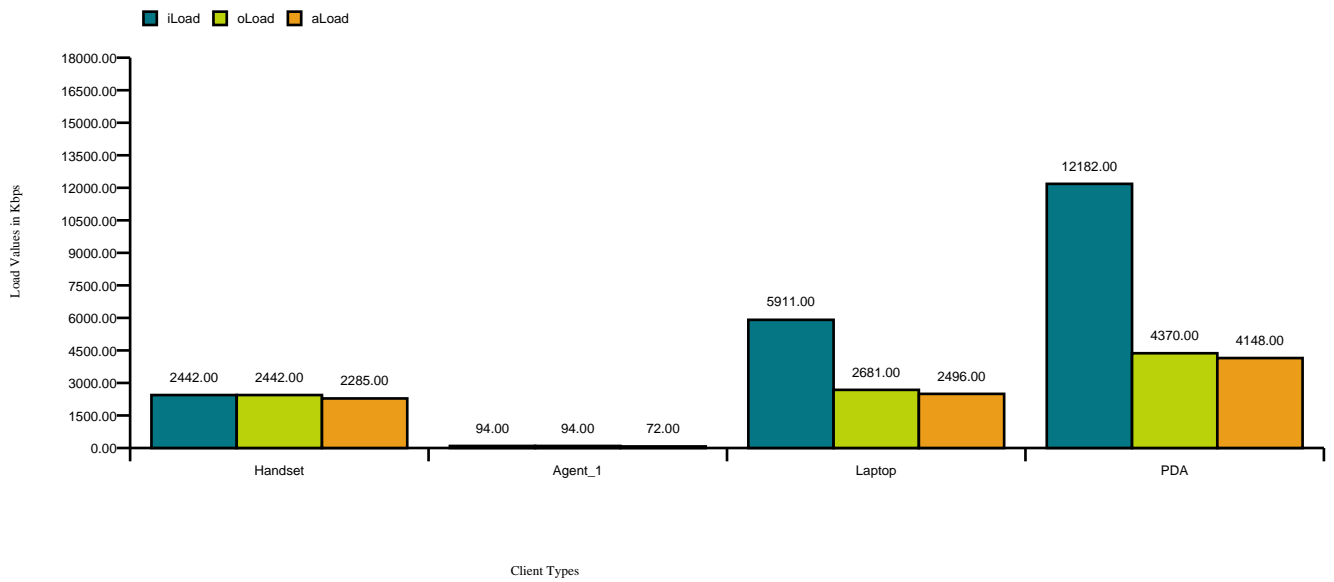


oLoad (Total 9.59 Mbps)



Achieved Load (Total 8.72 Mbps)

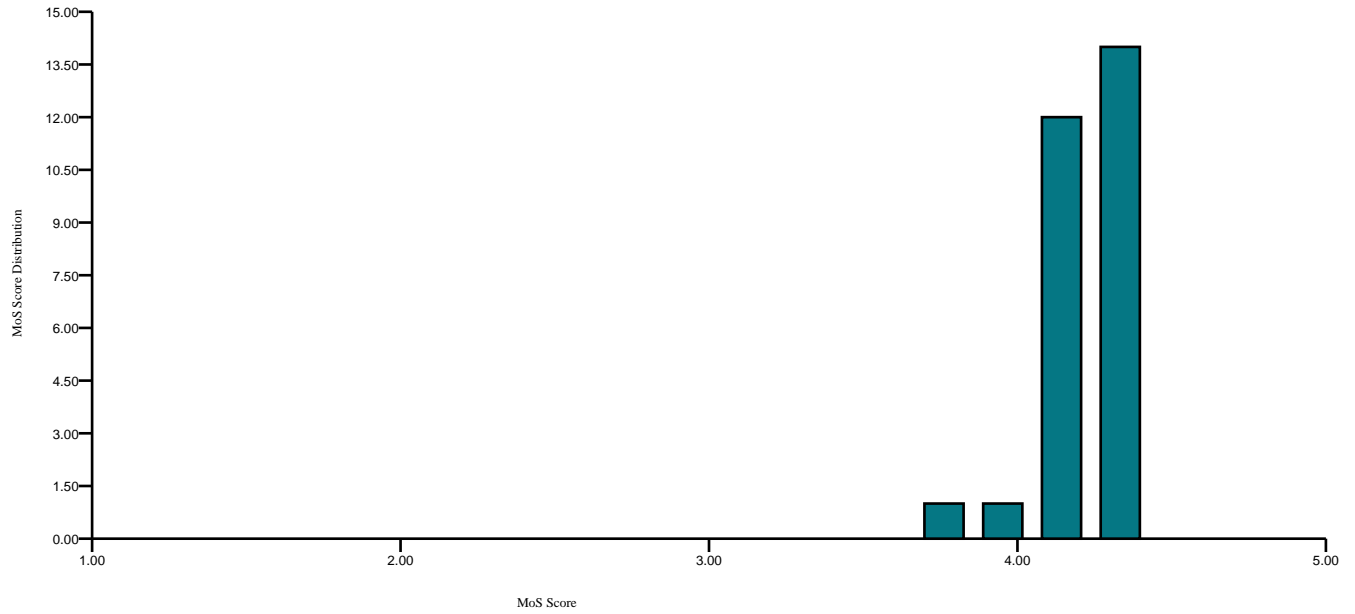
iLoad, oLoad and aLoad per Client Type



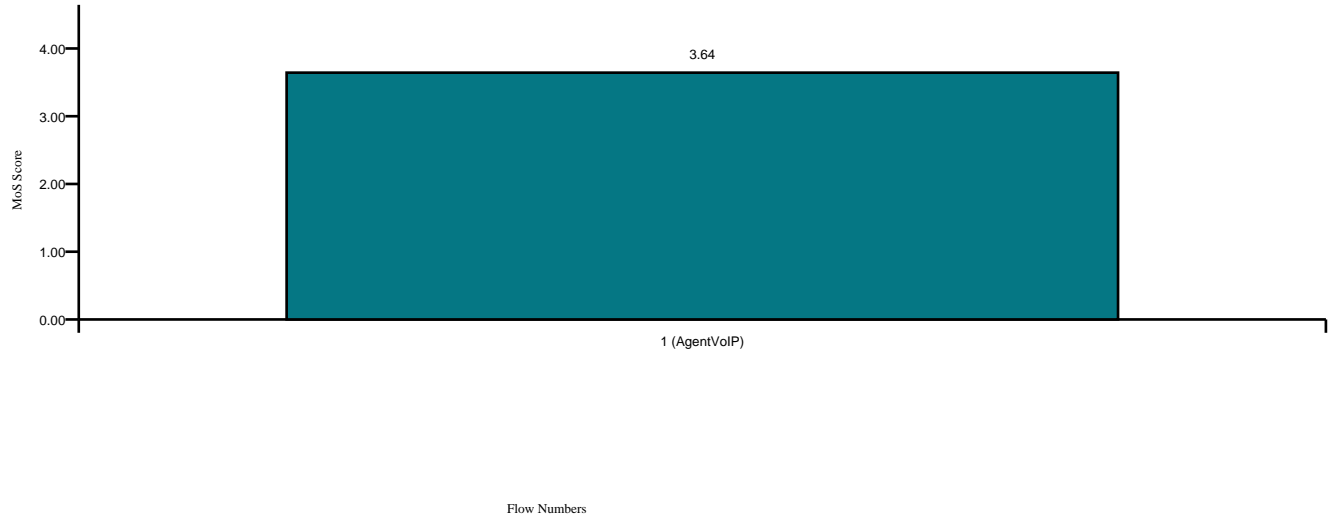
Graphs

The Graphs below show the per traffic flow performance measurements of each traffic type

MoS Score Distribution for all VOIP flows



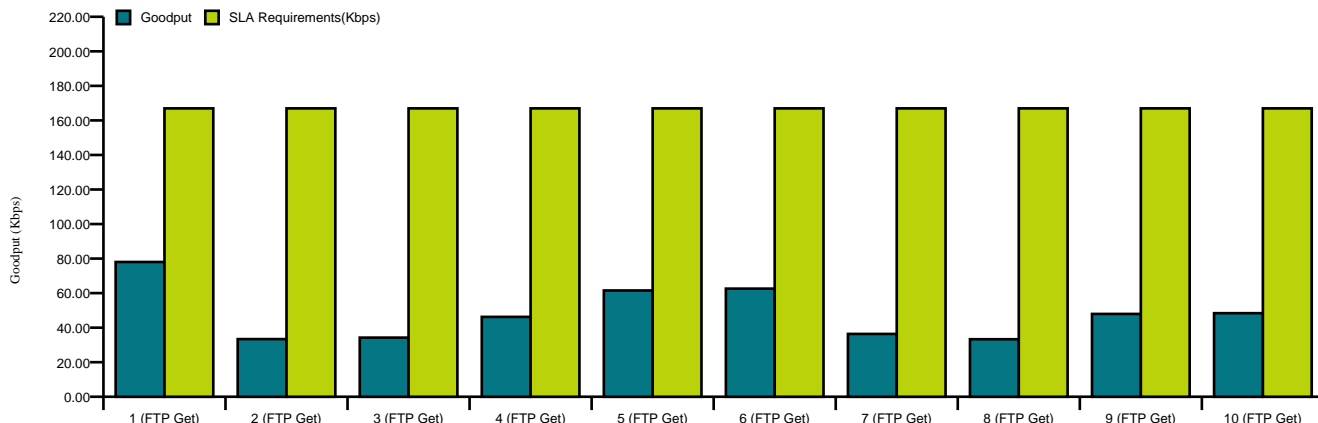
MoS Score for all agentVoip flows



The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.1.186 to 192.168.1.185	00:11:22:33:ff:03 to xx:xx:xx:xx:xx:xx	192.168.1.14_card1_port1 to Virtual_WaveAgent_Port	None, 00:00:00:00:00:00	loopback

FTP Goodput



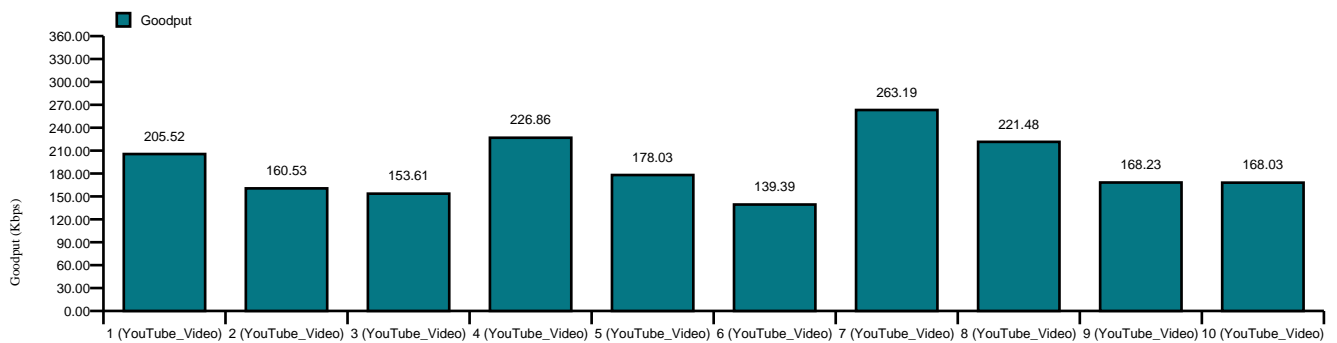
Flow Numbers

The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.2.200 to 192.168.0.16	00:01:01:a8:02:c8 to 00:02:01:a8:00:10	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
2	192.168.2.200 to 192.168.0.14	00:01:01:a8:02:c8 to 00:03:01:a8:00:0e	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
3	192.168.2.200 to 192.168.0.12	00:01:01:a8:02:c8 to 00:03:01:a8:00:0c	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
4	192.168.2.200 to 192.168.0.10	00:01:01:a8:02:c8 to 00:03:01:a8:00:0a	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
5	192.168.2.200 to 192.168.0.17	00:01:01:a8:02:c8 to 00:02:01:a8:00:11	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
6	192.168.2.200 to 192.168.0.15	00:01:01:a8:02:c8 to 00:02:01:a8:00:0f	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
7	192.168.2.200 to 192.168.0.13	00:01:01:a8:02:c8 to 00:03:01:a8:00:0d	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
8	192.168.2.200 to 192.168.0.18	00:01:01:a8:02:c8 to 00:02:01:a8:00:12	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink

Flow Num	IP	MAC	Port	Network	Direction
9	192.168.2.200 to 192.168.0.11	00:01:01:a8:02:c8 to 00:03:01:a8:00:0b	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
10	192.168.2.200 to 192.168.0.19	00:01:01:a8:02:c8 to 00:02:01:a8:00:13	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink

TCPVideo Goodput



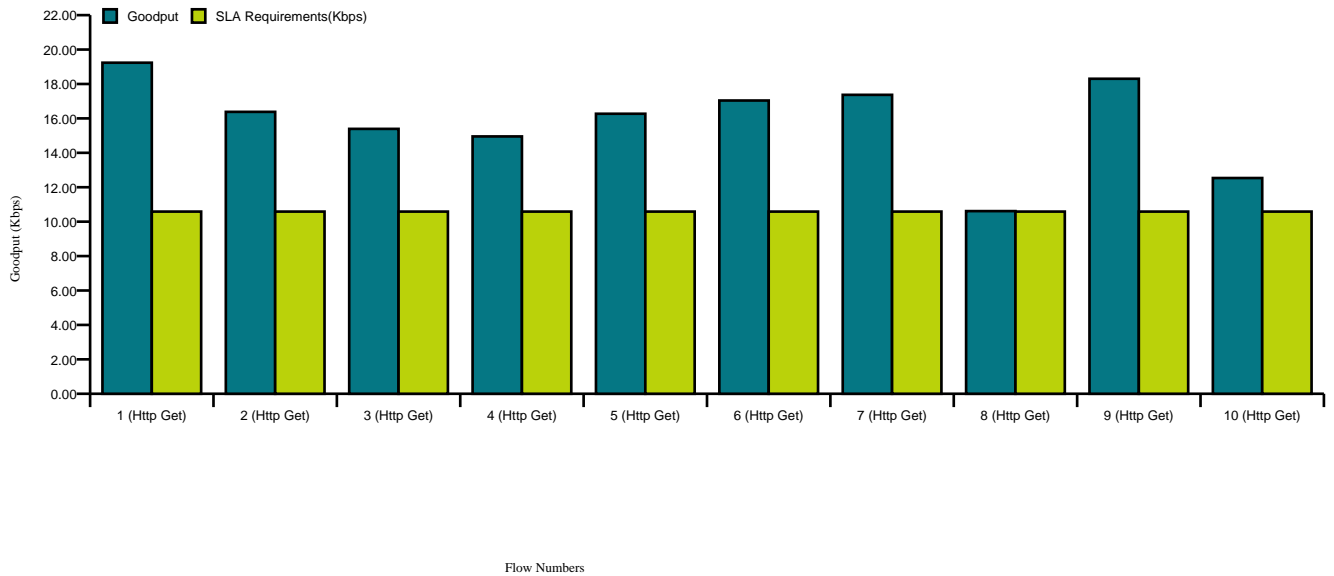
Flow Numbers

The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.3.200 to 192.168.2.19	00:01:01:a8:03:c8 to 00:02:01:a8:02:13	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
2	192.168.3.200 to 192.168.2.13	00:01:01:a8:03:c8 to 00:03:01:a8:02:0d	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
3	192.168.3.200 to 192.168.2.15	00:01:01:a8:03:c8 to 00:02:01:a8:02:0f	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
4	192.168.3.200 to 192.168.2.11	00:01:01:a8:03:c8 to 00:03:01:a8:02:0b	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
5	192.168.3.200 to 192.168.2.17	00:01:01:a8:03:c8 to 00:02:01:a8:02:11	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink

Flow Num	IP	MAC	Port	Network	Direction
6	192.168.3.200 to 192.168.2.14	00:01:01:a8:03:c8 to 00:03:01:a8:02:0e	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
7	192.168.3.200 to 192.168.2.10	00:01:01:a8:03:c8 to 00:03:01:a8:02:0a	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
8	192.168.3.200 to 192.168.2.18	00:01:01:a8:03:c8 to 00:02:01:a8:02:12	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
9	192.168.3.200 to 192.168.2.12	00:01:01:a8:03:c8 to 00:03:01:a8:02:0c	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
10	192.168.3.200 to 192.168.2.16	00:01:01:a8:03:c8 to 00:02:01:a8:02:10	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink

HTTP Goodput

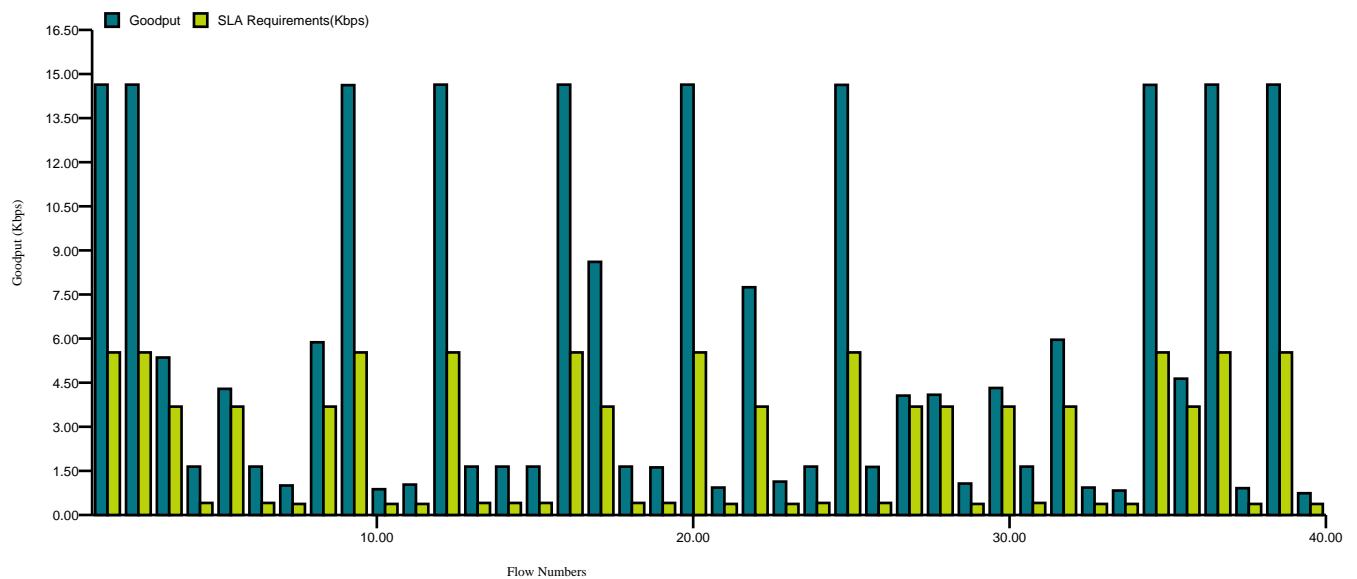


The following table shows more information about each flow of this traffic type for debugging purposes.

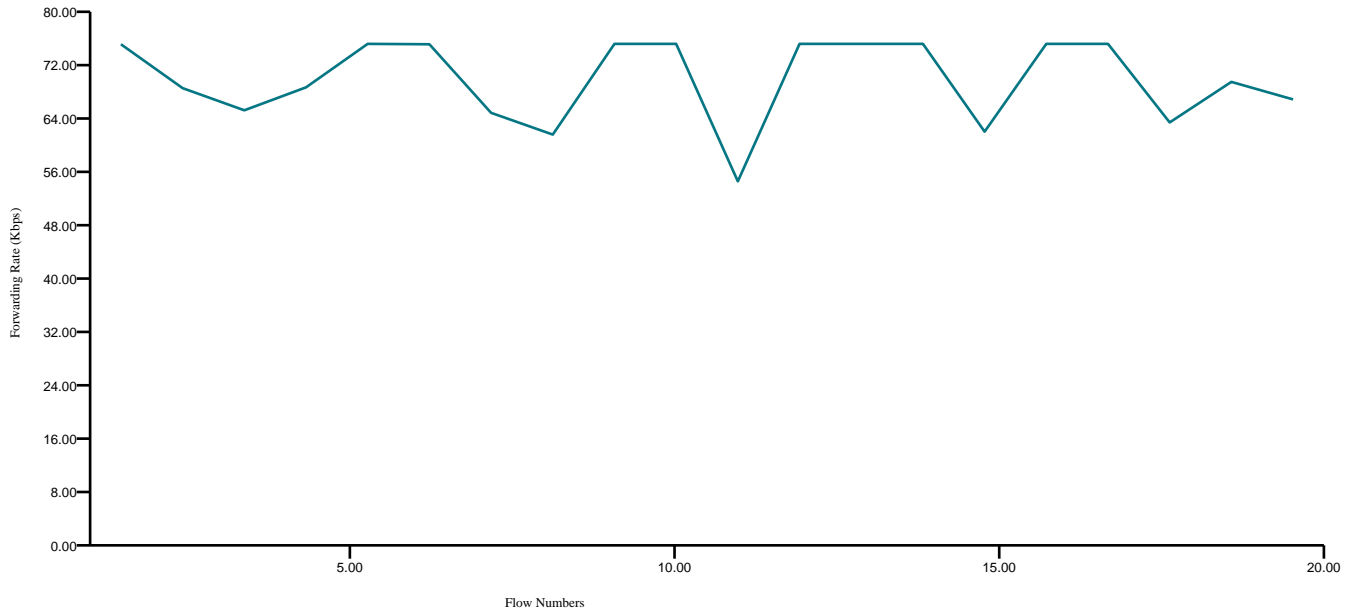
Flow Num	IP	MAC	Port	Network	Direction
1	192.168.3.200 to 192.168.0.10	00:01:01:a8:03:c8 to 00:03:01:a8:00:0a	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
2	192.168.3.200 to 192.168.0.12	00:01:01:a8:03:c8 to 00:03:01:a8:00:0c	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink

Flow Num	IP	MAC	Port	Network	Direction
3	192.168.3.200 to 192.168.0.14	00:01:01:a8:03:c8 to 00:03:01:a8:00:0e	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
4	192.168.3.200 to 192.168.0.17	00:01:01:a8:03:c8 to 00:02:01:a8:00:11	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
5	192.168.3.200 to 192.168.0.11	00:01:01:a8:03:c8 to 00:03:01:a8:00:0b	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
6	192.168.3.200 to 192.168.0.13	00:01:01:a8:03:c8 to 00:03:01:a8:00:0d	192.168.1.14_card1_port1 to 192.168.1.14_card3_port1	veriwave2, 00:18:74:8a:13:10	downlink
7	192.168.3.200 to 192.168.0.16	00:01:01:a8:03:c8 to 00:02:01:a8:00:10	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
8	192.168.3.200 to 192.168.0.19	00:01:01:a8:03:c8 to 00:02:01:a8:00:13	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
9	192.168.3.200 to 192.168.0.15	00:01:01:a8:03:c8 to 00:02:01:a8:00:0f	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink
10	192.168.3.200 to 192.168.0.18	00:01:01:a8:03:c8 to 00:02:01:a8:00:12	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave2, 00:18:74:8a:03:00	downlink

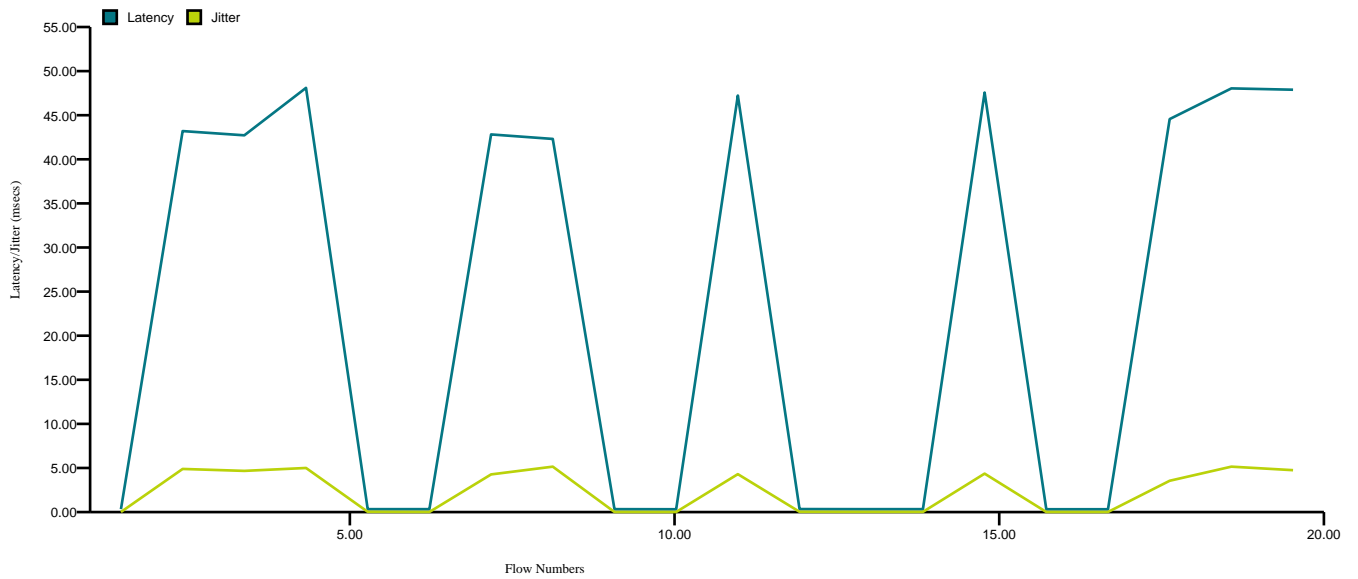
TCP Goodput



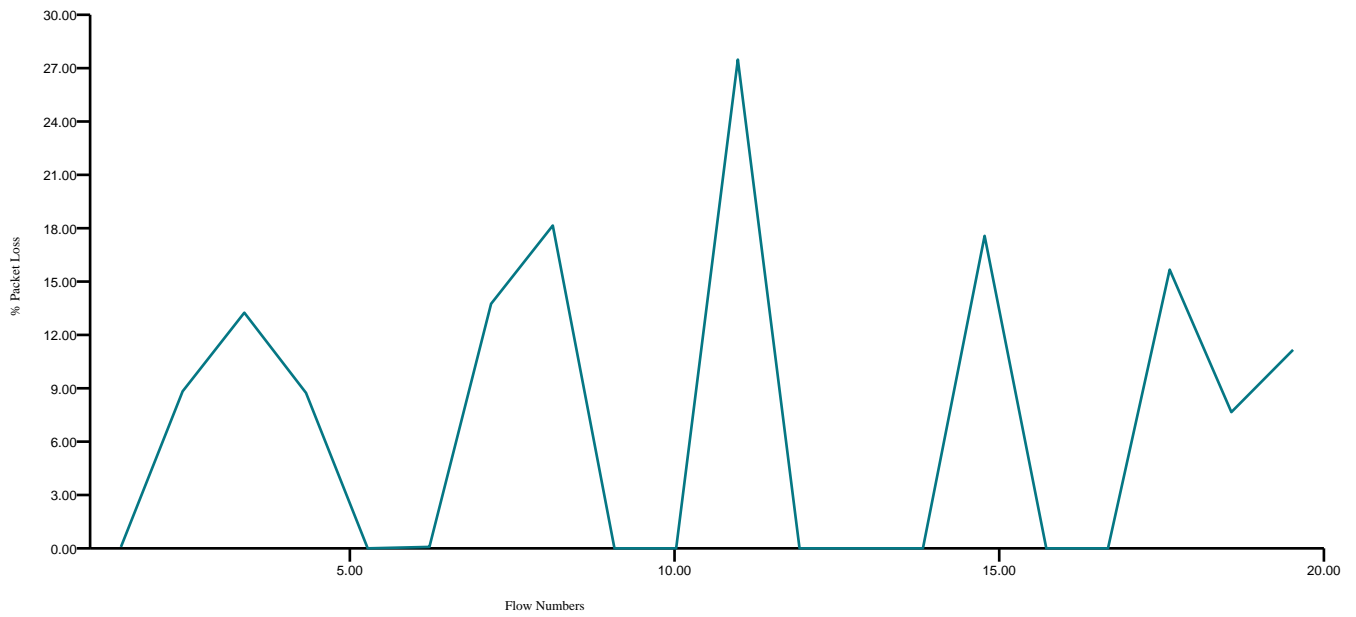
Forwarding Rate for UDP flows



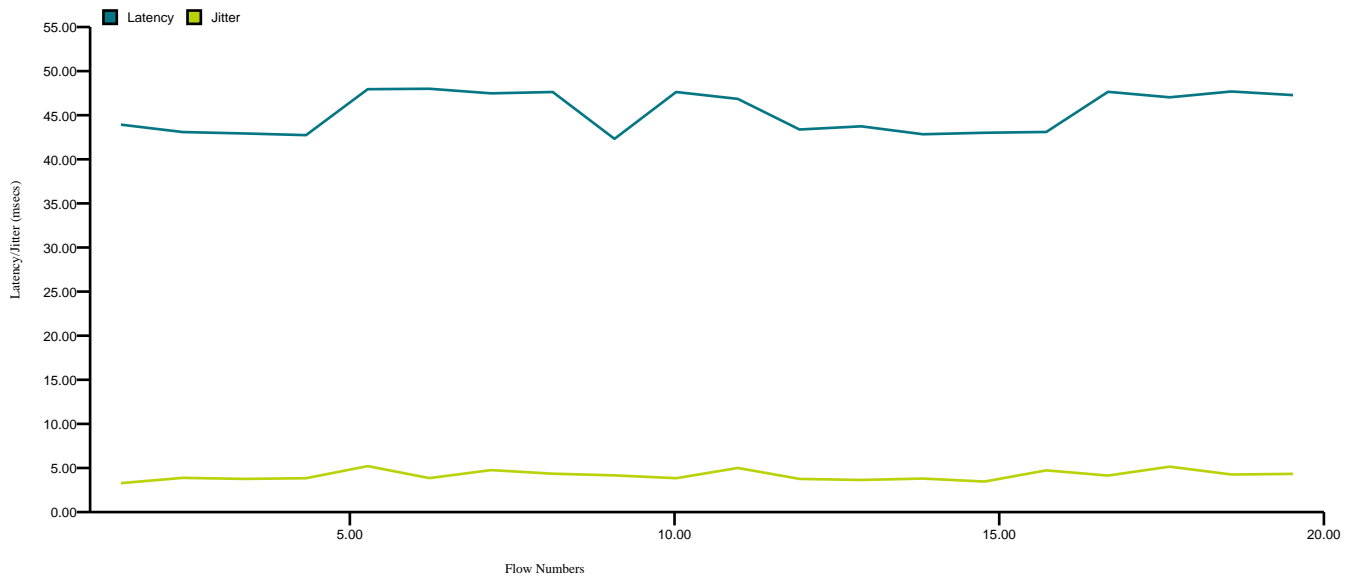
Latency and Jitter for UDP flows



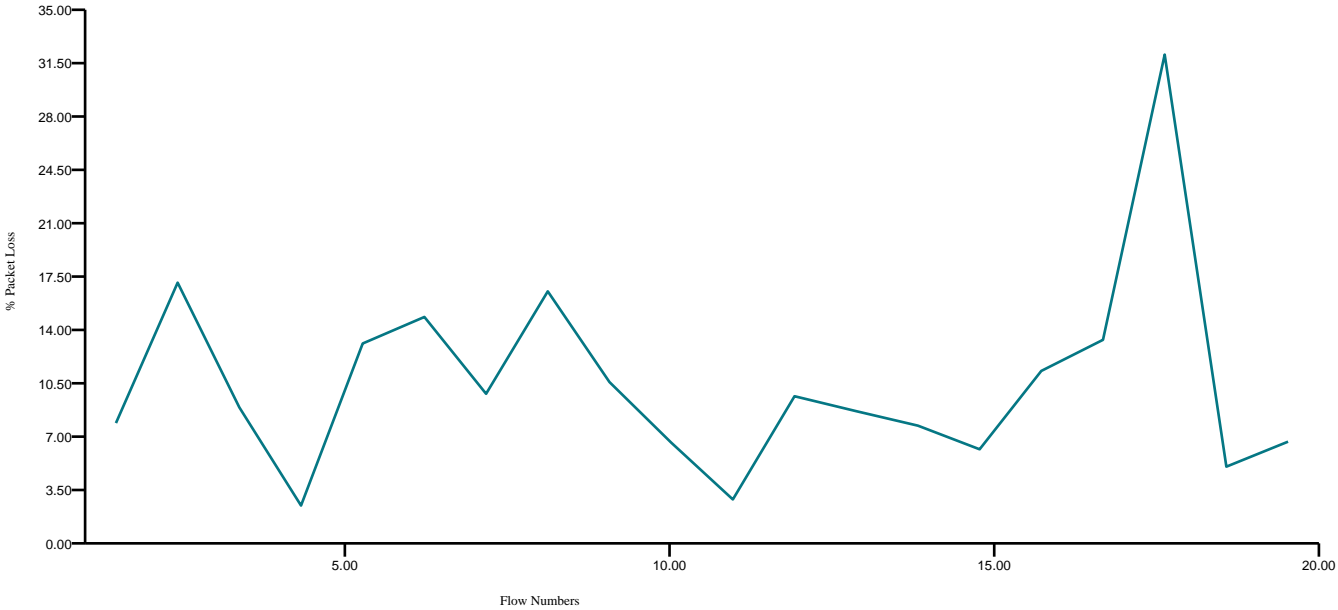
Percentage Packet Loss for UDP flows



Latency and Jitter for RTP flows



Percentage Packet Loss for RTP flows



Test Parameters

The table below shows the input parameters for the test

Parameter	Value
Trial Duration	60 secs
Settle Time	1 secs
Aging Time	0 secs
Reconnect Clients each Trial	True
Number of Trials	1 Trial(s)
Search Mode	None
Client Load Per Port	50
Continue Test On Fail Run	False

The table below shows the Intended Client Mix configured in the test. The actual percentages of clients and the types of traffic in the test may change if some of the clients/flows fail to connect.

Client Type	Traffic Profiles	Num Clients
Handset	VOIPG711	7
Laptop	DNS Req,FTP Get,Http Get,NetBios,SMTP,unclassified UDP Traffic	5
PDA	RealVideo Stream,Unclassified TCP,Windows Media Player,YouTube_Video	5
Agent_1	AgentVoIP	1

The table below shows SLA Specifications for the Traffic Flows in the Test

Traffic profile	SLA Metrics and Requirement
YouTube_Video	playDelay = 5 secs , contPlay = Yes ,
VOIPG711	slaMode = R-value , value = 78 ,
Http Get	perLoad = 50 % (12.5 Kbps)
Windows Media Player	Latency = 10000 msecs , Jitter = 500 msecs , PacketLoss = 10 % ,
SMTP	perLoad = 50 % (14.0 Kbps)
DNS Req	perLoad = 50 % (1.5 Kbps)
Unclassified TCP	perLoad = 50 % (5.0 Kbps)
RealVideo Stream	Latency = 10000 msecs , Jitter = 500 msecs , PacketLoss = 10 % ,
unclassified UDP Traffic	Latency = 10000 msecs , Jitter = 500 msecs , PacketLoss = 10 % ,
AgentVoIP	slaMode = R-value , value = 78 ,
FTP Get	perLoad = 50 % (190.0 Kbps)
NetBios	perLoad = 50 % (1.5 Kbps)

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	Channel	BSSID	SSID	Min RSSI	Avg RSSI	Max RSSI
192.168.1.14_card3_port1	1	00:18:74:8A:13:10	veriwave2	-28.0 dBm	-28.0 dBm	-28.0 dBm
192.168.1.14_card2_port1	11	00:18:74:8A:03:00	veriwave2	-15.0 dBm	-15.0 dBm	-15.0 dBm

RSSI values should be between -25 dBm and -35 dBm. If the RSSI is not in this range, modify the external attenuation to bring it into this range.

Other Information

Results Directory C:\Program Files\VeriWave\WaveClient\Results\20091007-111656
 WaveQoE Version 2.0-WT-3.6, 2009.10.06.10
 WaveTest Version 3.6.1, 2009.07.28.07