

Enterprise WaveQoE Report

June 02, 2009
11:21:54

Device Tested:

AP Model ::
AP SW Version ::
WLAN Switch Model ::
WLAN Switch SW Version ::

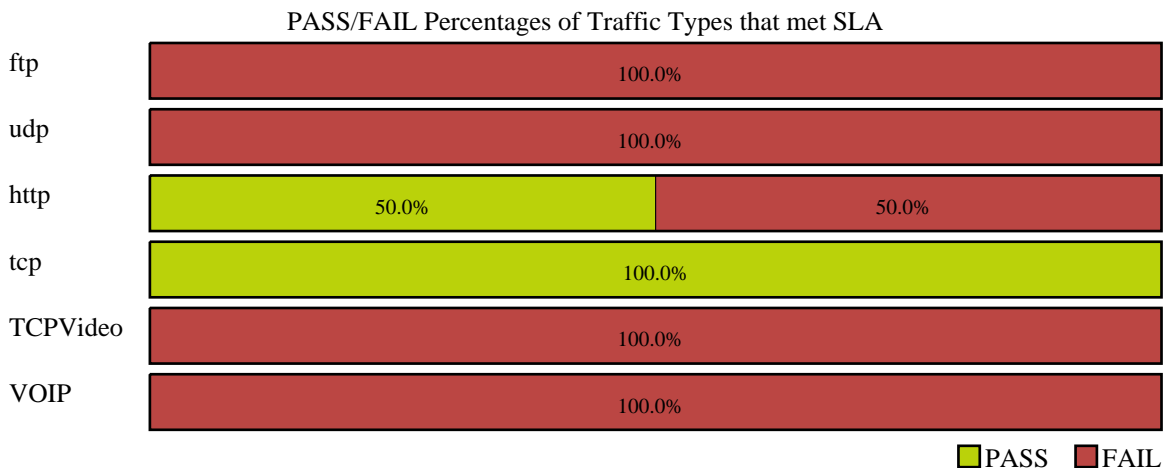


Overview

The WaveQoE Real-World Deployment Test accurately replicates the complex interaction of clients, servers and traffic profiles. By creating usage profiles and traffic mixtures that were found to be representative in various network environments, the test measures and reports key application layer metrics that affect end-user Quality of Experience. The test also reports if the Service Level Agreement criteria set by the user for the different application layer traffic types have been met. The real-world networks replicated include: health-care, education, airports, warehouses, retail, hot spots, and service provider managed services. Each deployment model is characterized by a mix of clients, servers, client locations and behavior, traffic mix and other characteristics. These clients and servers can be configured to use different security schemes, run various higher layer applications, and utilize different QoS functions of the network. Users may also create their own application and client mixes if so desired.

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



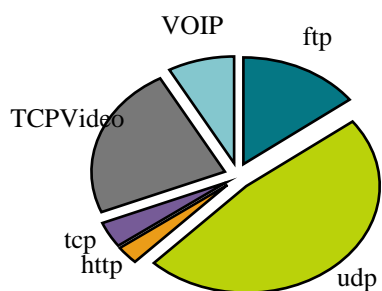
The Table below shows the percentages of Clients/Flows that connected in the test. Only the results of the clients/flows that connected will appear in the report

Type	Value
Successful Client Connections	13 out of 13 (100 %)
Successful TCP/HTTP/FTP Connections	11 out of 11 (100 %)
Successful ARP Exchanges	7 out of 7 (100 %)

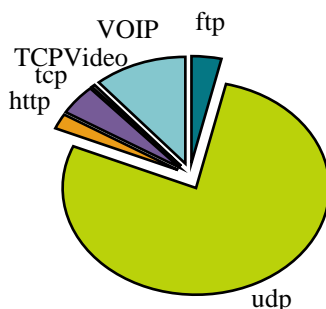
The summary table below shows the per flow average performance measurements of each traffic type

Flow Type	Num Flows	Layer7 Results	ILOAD (Kbps)	OLOAD (Kbps)	Fwd Rate (Kbps)	Latency (msec)	Jitter (msec)	% Packet Loss
VOIP	4	MOS Score: 2.75, R-Value: 53.35	87.2	74.3	51.4	92.9	11.2	29.8
ftp	2	File Transfer Time: 6011.4 secs, Goodput: 40.2 Kbps	317.0	47.8	-	-	-	35.0
TCPVideo	1	Goodput - 2.33 Kbps	1000.0	11.8	-	-	-	80.0
http	2	Goodput - 22.57 Kbps	59.5	30.4	-	-	-	22.2
tcp	6	Goodput - 9.96 Kbps	28.0	20.3	-	-	-	-0.1
udp	1	-	2055.4	2055.4	719.8	2526.2	3.8	65.0

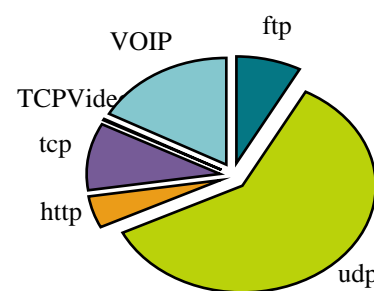
The Total Intended Load is 4.33 Mbps, offered load is 2.64 Mbps and achieved load is 1.20 Mbps



iLoad (Total 4.33 Mbps)

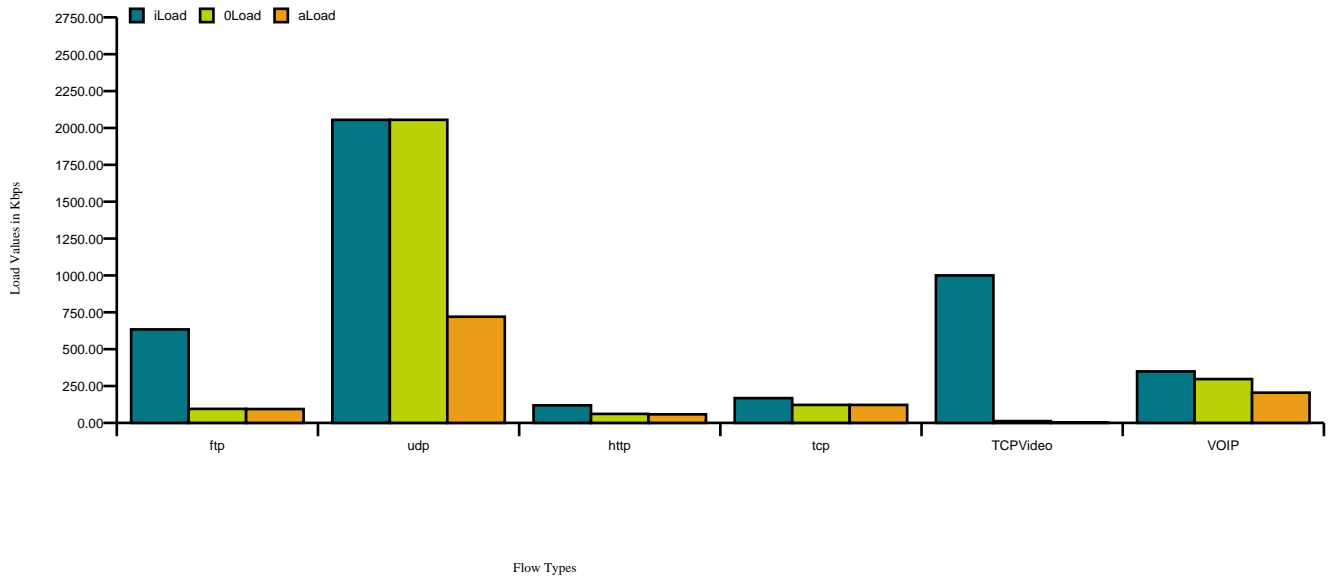


oLoad (Total 2.64 Mbps)

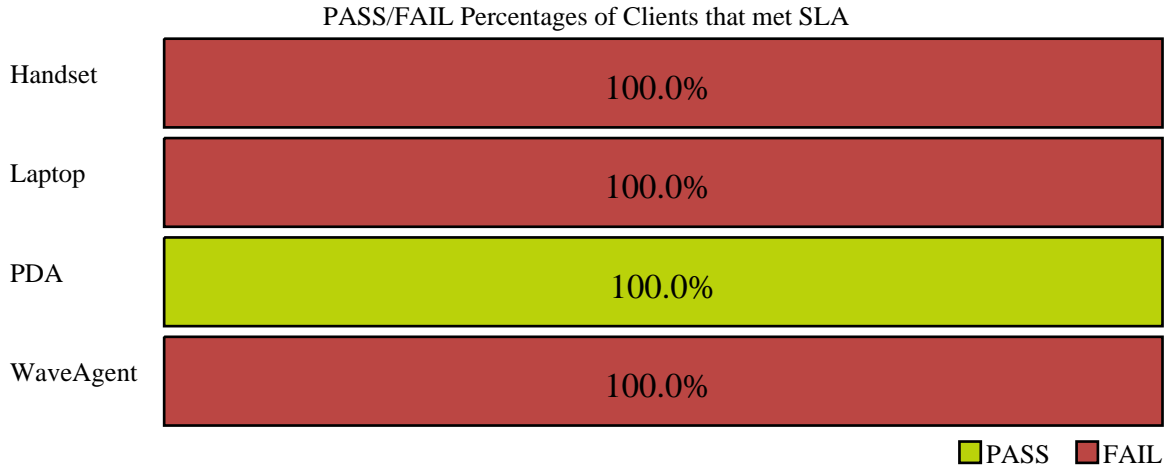


Achieved Load (Total 1.20 Mbps)

iLoad, oLoad and aLoad per Traffic Type



Per Client Type Results

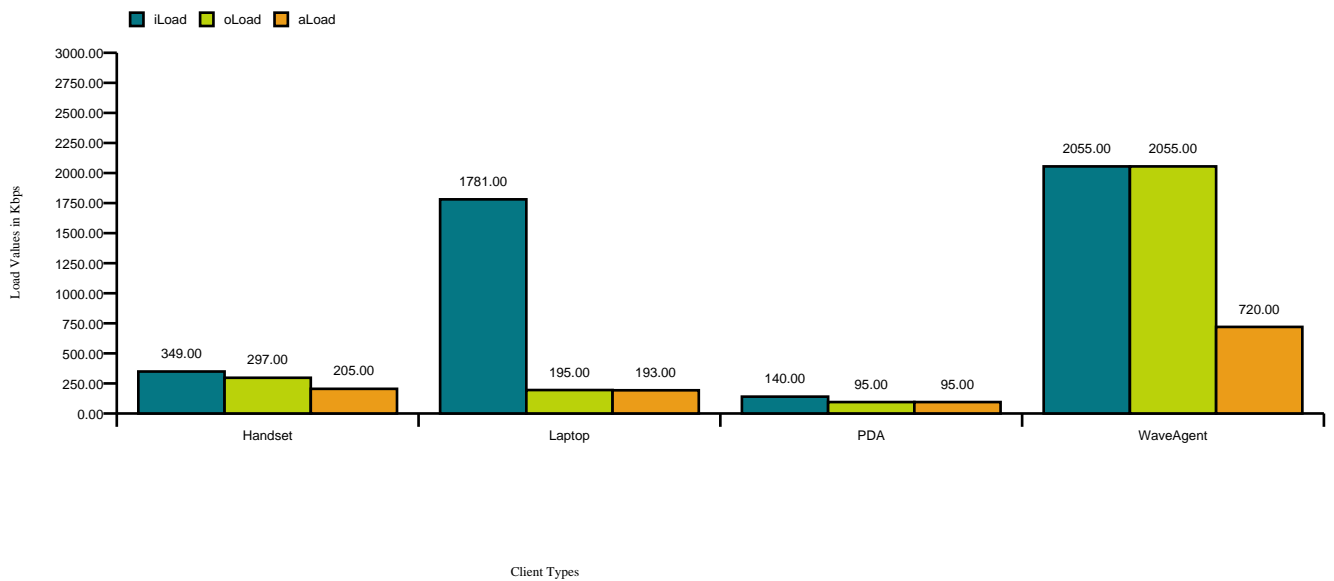
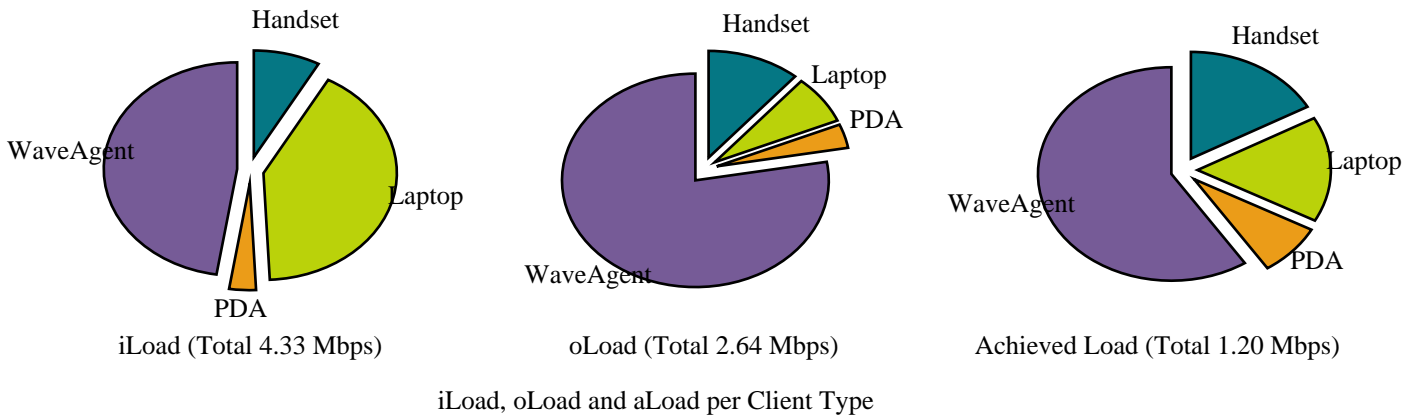


The Table below shows the percentage of Clients of each client type that satisfied the SLA

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	2	VOIP,	0
Laptop	1	FTP, FTP, HTTP, HTTP, TCP, TCPVideo,	0

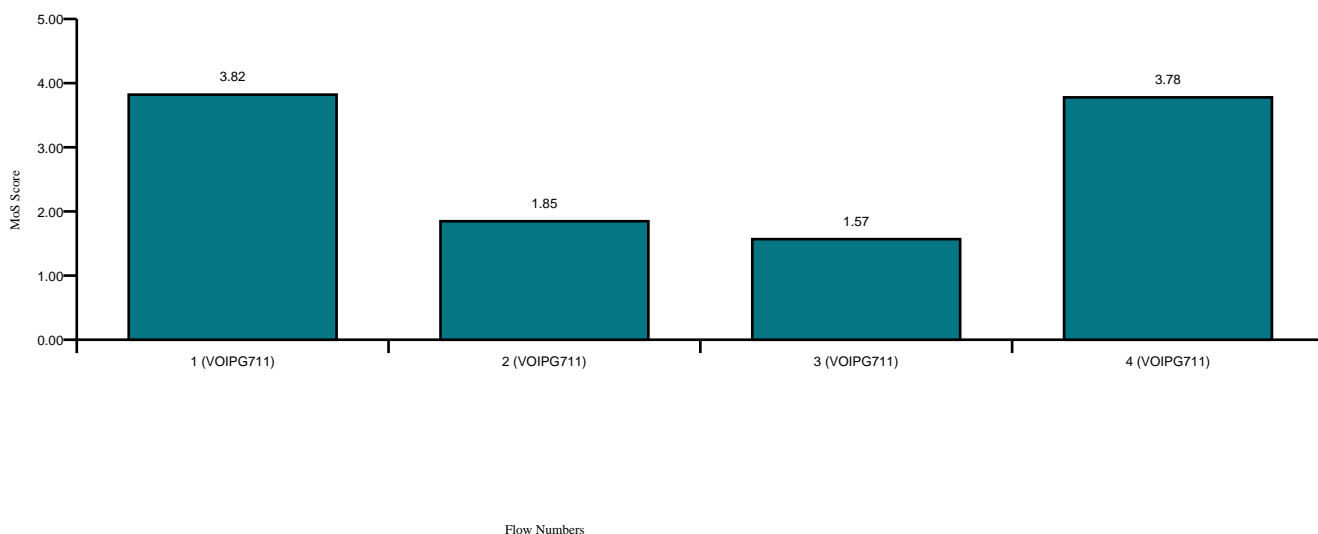
Client Type	Number of Clients	Flow Types	% of Clients that met SLA
PDA	5	TCP,	100
WaveAgent	1	UDP,	0



Graphs

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

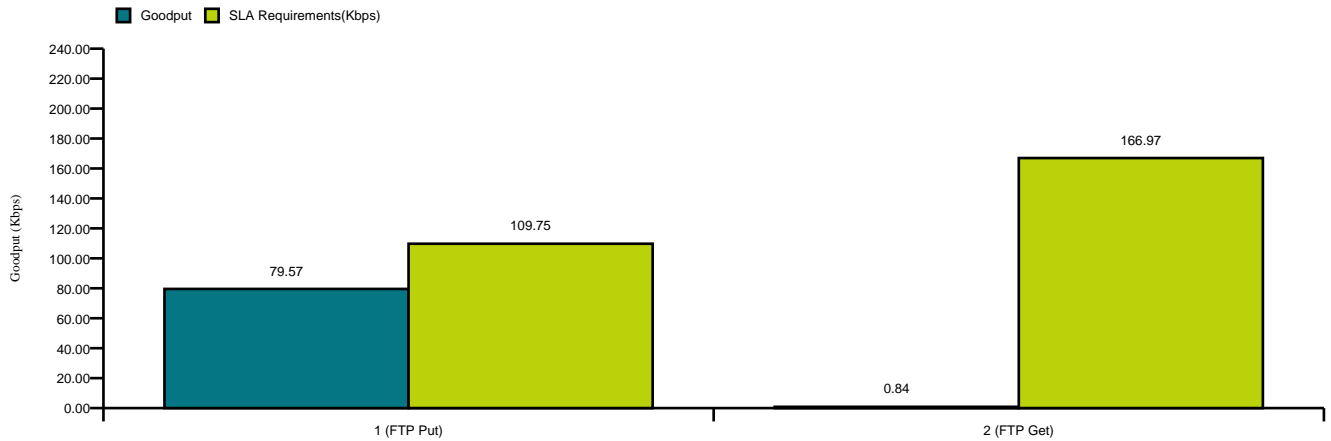
MoS Score for all VOIP flows



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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.10.245 to 192.168.10.240	00:02:01:06:00:00 to 00:01:01:02:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
2	192.168.10.240 to 192.168.10.245	00:01:01:02:00:00 to 00:02:01:06:00:00	192.168.1.10_card1_port1 to 192.168.1.10_card2_port1	demo, 00:14:d1:c2:ac:19	Downlink
3	192.168.10.240 to 192.168.10.243	00:01:01:02:00:00 to 00:02:01:07:00:00	192.168.1.10_card1_port1 to 192.168.1.10_card2_port1	demo, 00:14:d1:c2:ac:19	Downlink
4	192.168.10.243 to 192.168.10.240	00:02:01:07:00:00 to 00:01:01:02:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink

FTP Goodput

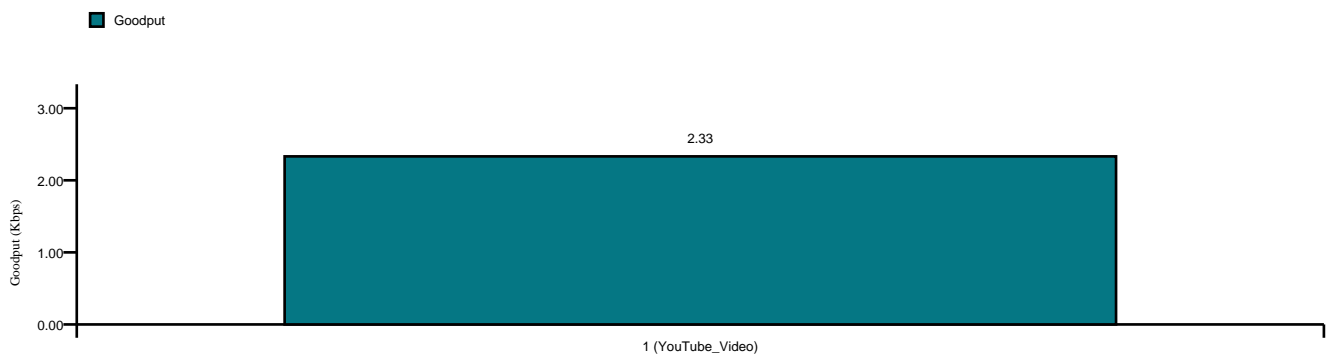


Flow Numbers

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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.10.241 to 192.168.10.246	00:02:01:0d:00:00 to 00:01:01:04:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
2	192.168.10.246 to 192.168.10.241	00:01:01:04:00:00 to 00:02:01:0d:00:00	192.168.1.10_card1_port1 to 192.168.1.10_card2_port1	demo, 00:14:d1:c2:ac:19	Downlink

TCPVideo Goodput

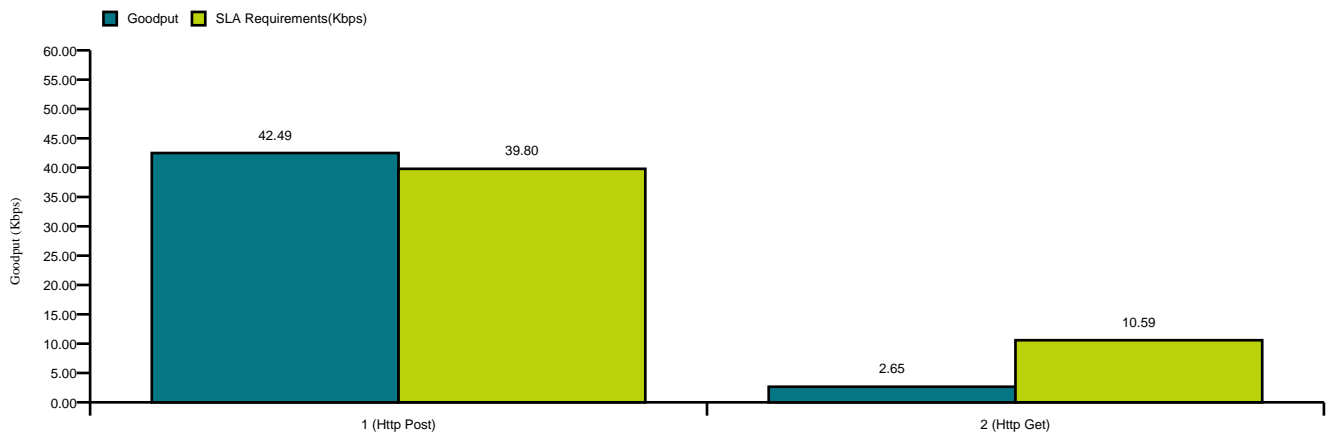


Flow Numbers

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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.10.244 to 192.168.10.241	00:01:01:05:00:00 to 00:02:01:0d:00:00	192.168.1.10_card1_port1 to 192.168.1.10_card2_port1	demo, 00:14:d1:c2:ac:19	Downlink

HTTP Goodput

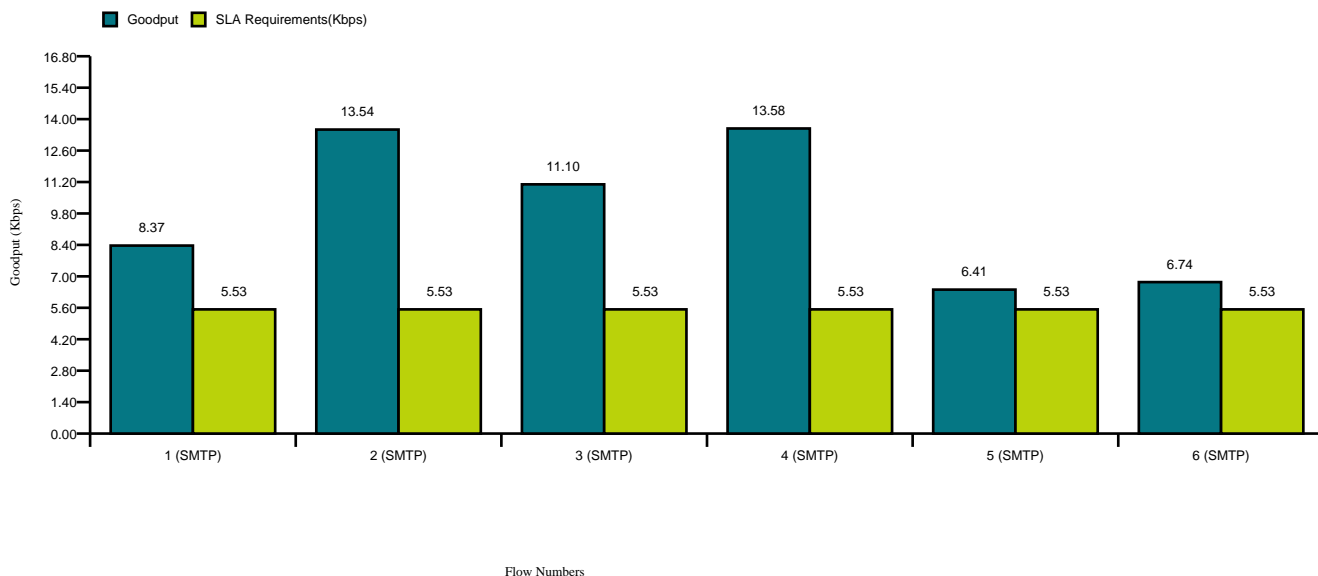


Flow Numbers

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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.10.241 to 192.168.10.244	00:02:01:0d:00:00 to 00:01:01:05:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
2	192.168.10.244 to 192.168.10.241	00:01:01:05:00:00 to 00:02:01:0d:00:00	192.168.1.10_card1_port1 to 192.168.1.10_card2_port1	demo, 00:14:d1:c2:ac:19	Downlink

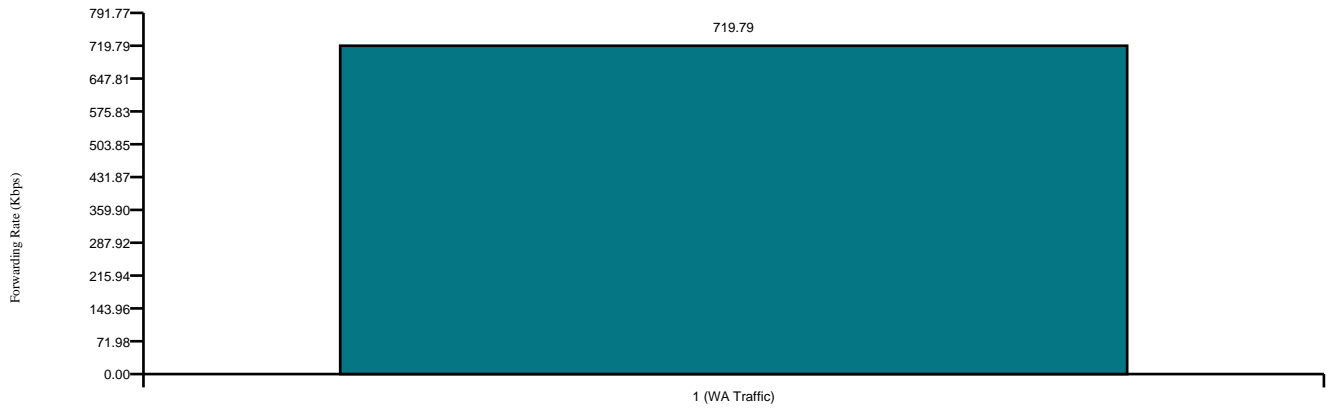
TCP Goodput



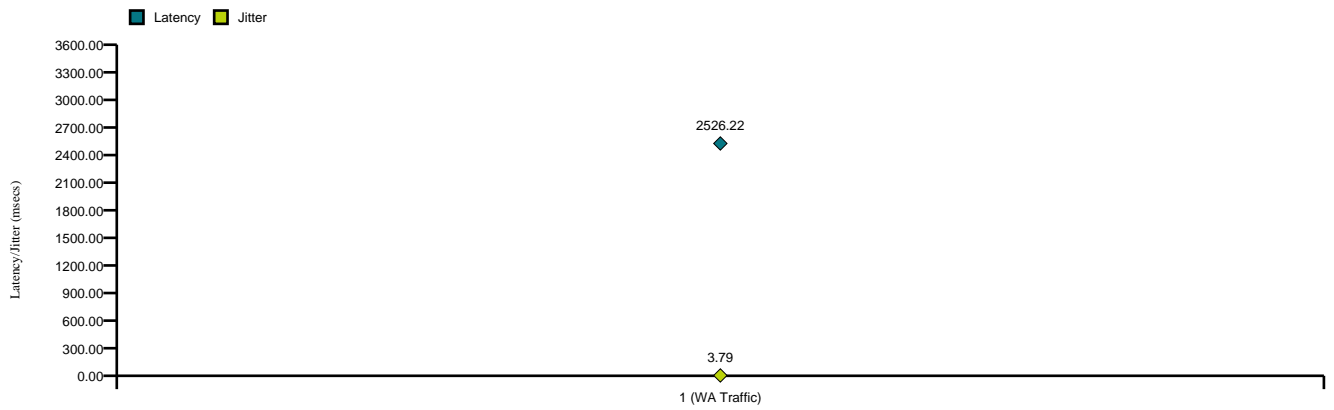
The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.10.236 to 192.168.10.242	00:02:01:0b:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
2	192.168.10.237 to 192.168.10.242	00:02:01:0a:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
3	192.168.10.239 to 192.168.10.242	00:02:01:08:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
4	192.168.10.241 to 192.168.10.242	00:02:01:0d:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
5	192.168.10.238 to 192.168.10.242	00:02:01:09:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink
6	192.168.10.235 to 192.168.10.242	00:02:01:0c:00:00 to 00:01:01:03:00:00	192.168.1.10_card2_port1 to 192.168.1.10_card1_port1	demo, 00:14:d1:c2:ac:19	Uplink

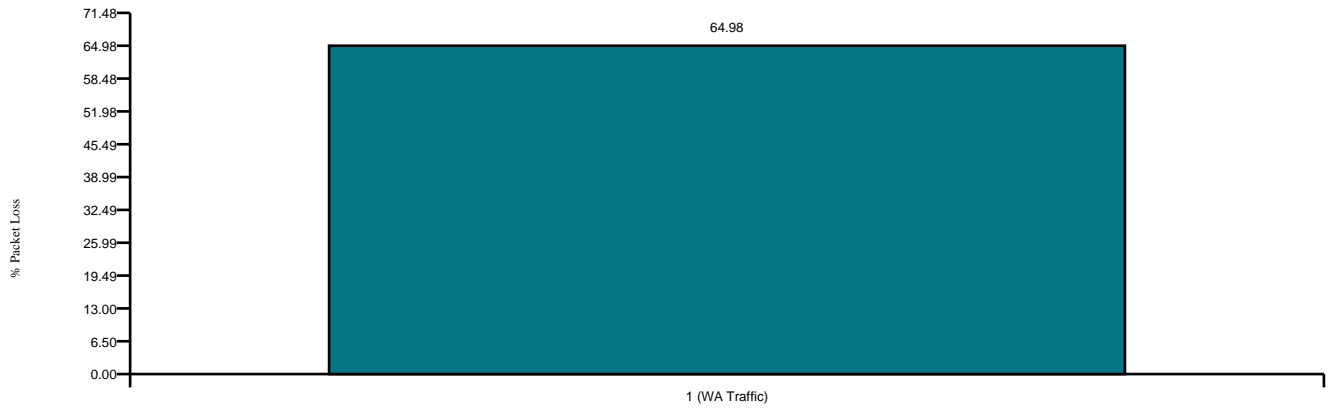
Forwarding Rate for UDP flows



Latency and Jitter for UDP flows



Percentage Packet Loss for UDP 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	192.168.10.247 to 192.168.10.20	00:01:01:01:00:00 to 00:01:01:a8:0a:14	192.168.1.10_card1_port1 to 192.168.1.10_card1_port1	demo, 00:00:00:00:00:00	Loopback

Test Parameters

The table below shows the input parameters for the test

Parameter	Value
WaveQoE Mode	ClientMix
Trial Duration	10 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	10
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	% Clients	Num Clients
WaveAgent	WA Traffic	10.0	1.0
Handset	VOIPG711	20.0	2.0
PDA	SMTP	50.0	5.0
Laptop	FTP Get,FTP Put,Http Get,Http Post,SMTP,YouTube_Video	10.0	1.0

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 ,
SMTP	perLoad = 50 % (14.0 Kbps)
FTP Put	perLoad = 50 % (127.0 Kbps)
Http Get	perLoad = 50 % (12.5 Kbps)
WA Traffic	Latency = 10 msec , Jitter = 1 msec , PacketLoss = 5 % ,
Http Post	perLoad = 50 % (47.0 Kbps)
FTP Get	perLoad = 50 % (190.0 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
192.168.1.10_card2_port1	11	00:14:D1:C2:AC:19	demo	-37.0 dBm	-37.0 dBm	-37.0 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:/Documents and Settings/timbd/Desktop/Microsoft Demo\20090602-112034
 WaveQoE Version 5.0-WT-3.5.1, 2009.04.22.03
 WaveTest Version 3.5.6, 2009.05.04.18