Medical Device Testing WaveClient Report

November 05, 2008
12:38:39

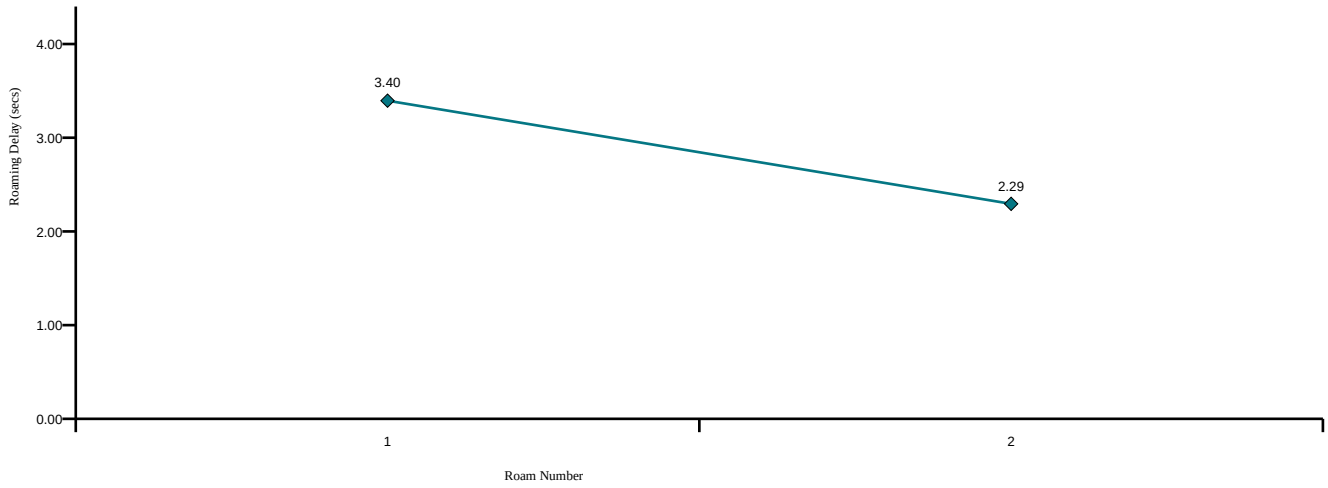
Device Tested:
AP Model::
AP SW Version::
Client Model::
Client SW Version::

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.

Result Summary

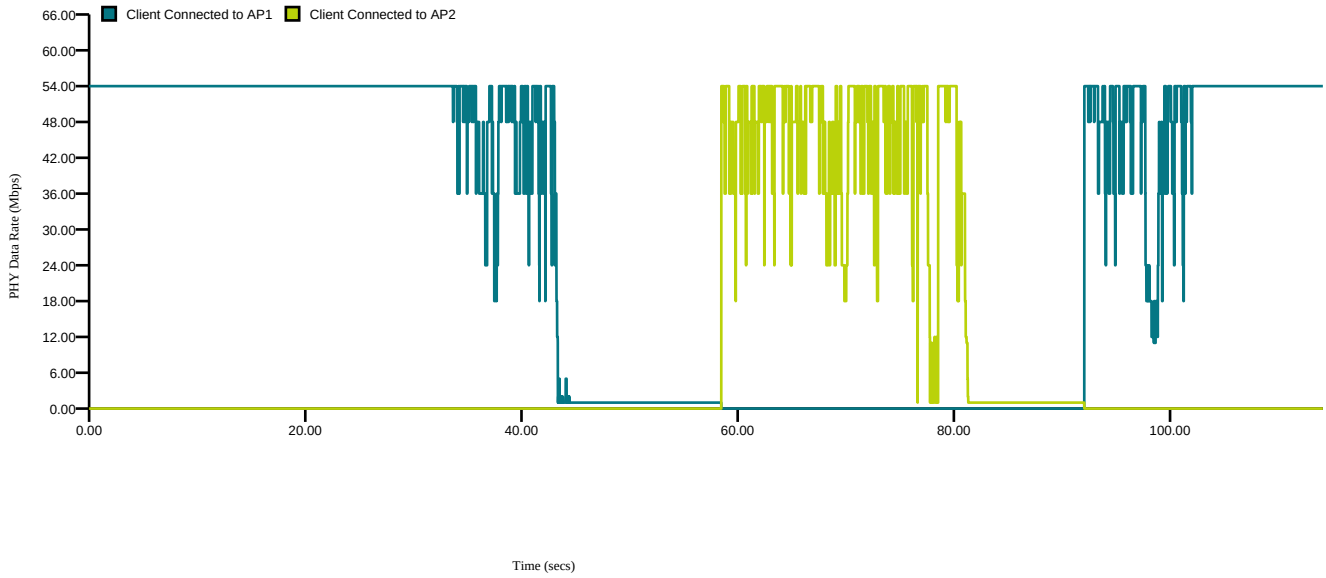
Roaming Delay Chart



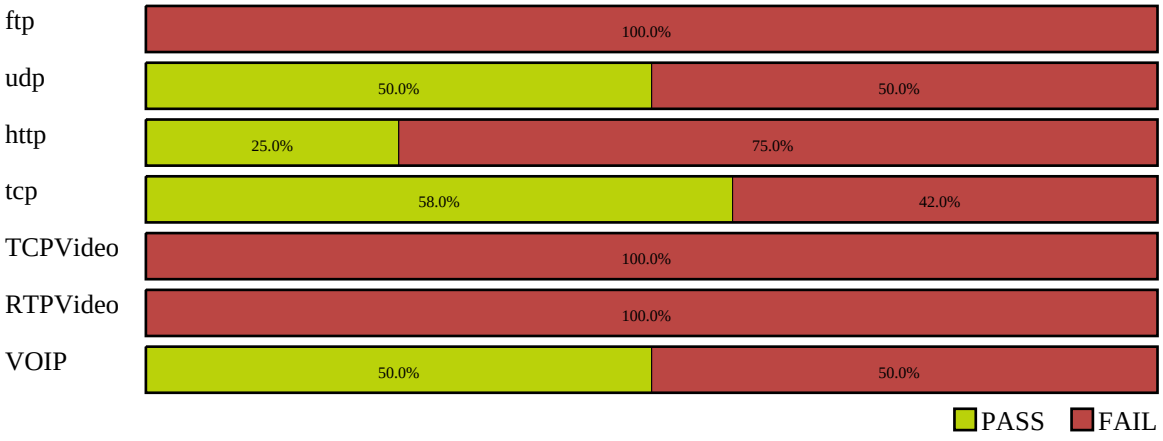
The Table below shows the performance of the client Flows:

Flow Name	Num Flows	Avg Roaming Delay(secs)	ILOAD (Kbps)	OLOAD (Kbps)	Fwd Rate (Kbps)	Avg Latency (msec)	Jitter (msec)	% Packet Loss
clientFlow1	1	2.8	-	-	-	-	-	-

Client PHY Data Rates Vs Time



PASS/FAIL Percentages of Traffic Types that met SLA

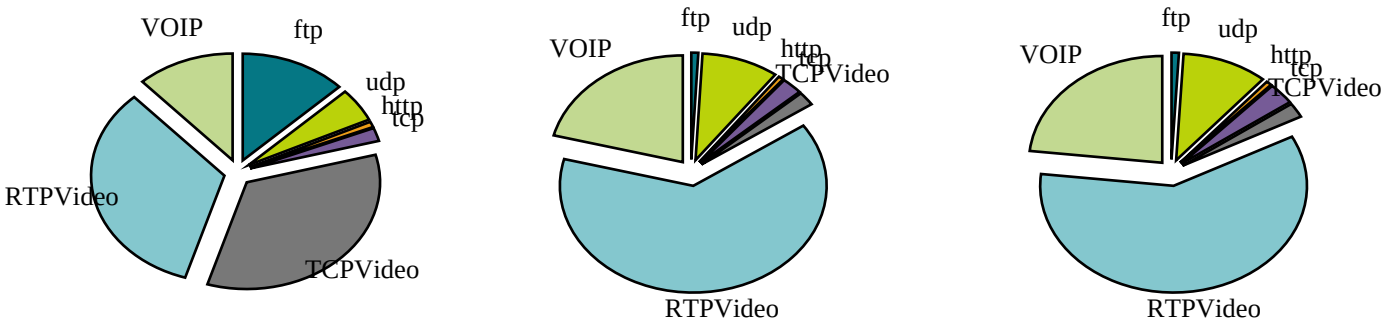


The summary table below shows the per flow average performance measurements of each traffic type

Flow Type	Num Flows	Layer7 Results	ILOAD (Kbps)	OLOAD (Kbps)	Fwd Rate (Kbps)	Latency (msec)	Jitter (msec)	% Packet Loss
VOIP	16	MOS Score: 3.55, R-Value: 69.99	87.2	81.2	66.2	84.4	5.9	17.2

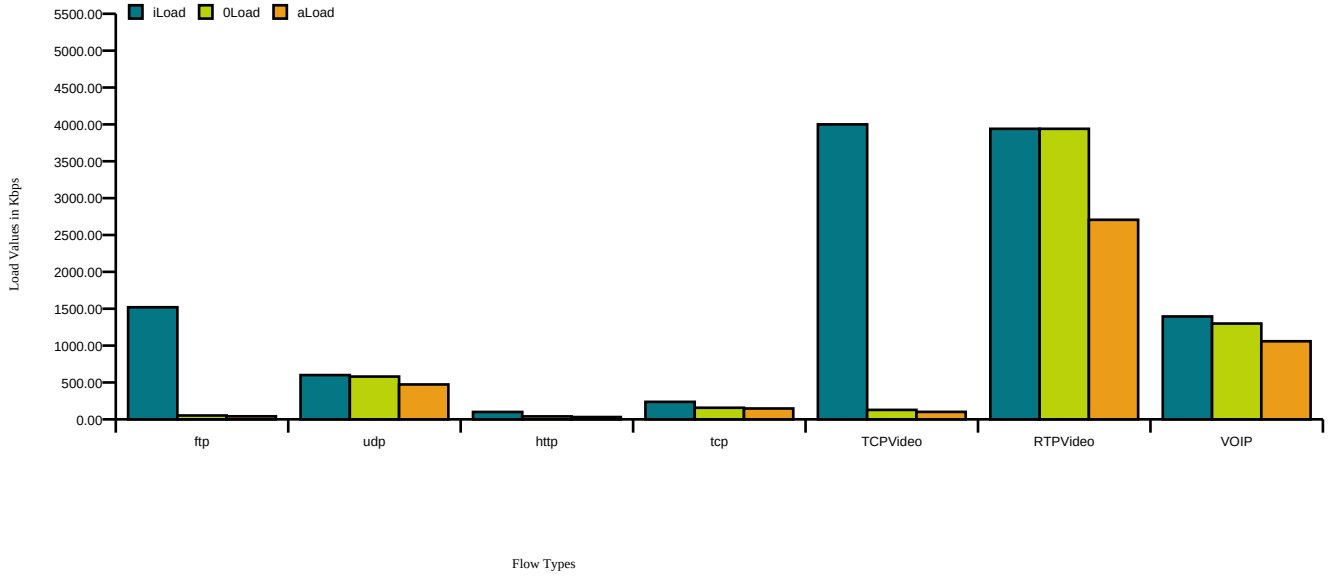
Flow Type	Num Flows	Layer7 Results	ILOAD (Kbps)	OLOAD (Kbps)	Fwd Rate (Kbps)	Latency (msec)	Jitter (msec)	% Packet Loss
RTPVideo	2	MDI Score - 668.88 msecs :31.31	1969.9	1969.9	1353.2	170.7	4.5	31.3
ftp	4	File Transfer Time: 1413.74 secs, Goodput: 9.03 Kbps	380.0	13.0	-	-	-	24.1
TCPVideo	4	Goodput - 23.91 Kbps	1000.0	32.0	-	-	-	21.6
http	4	Goodput - 6.76 Kbps	25.0	10.0	-	-	-	25.2
tcp	12	Goodput - 7.23 Kbps	19.8	13.1	-	-	-	14.3
udp	8	-	75.1	72.5	59.1	83.0	9.9	17.8

The Total Intended Load is 11.79 Mbps, offered load is 6.20 Mbps and achieved load is 4.56 Mbps

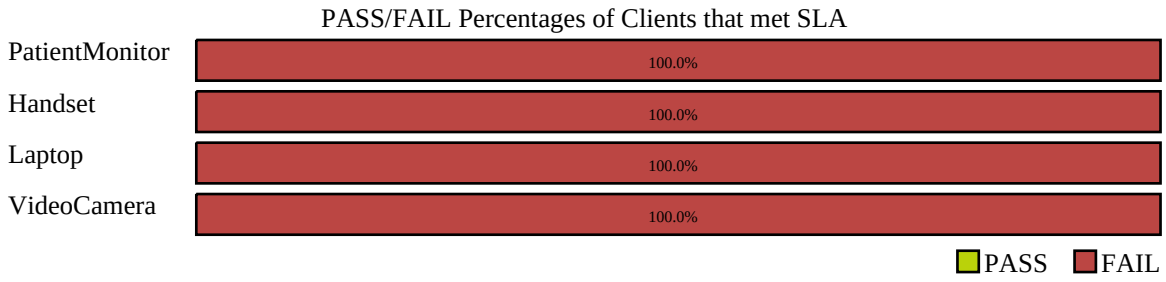


iLoad (Total 11.79 Mbps) oLoad (Total 6.20 Mbps) Achieved Load (Total 4.56 Mbps)

iLoad, oLoad and aLoad per Traffic Type



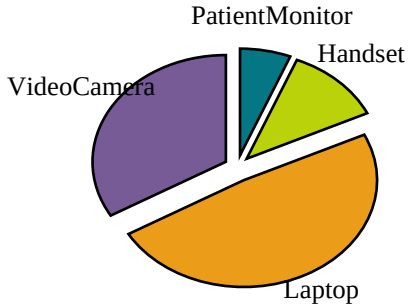
Per Client Type Results



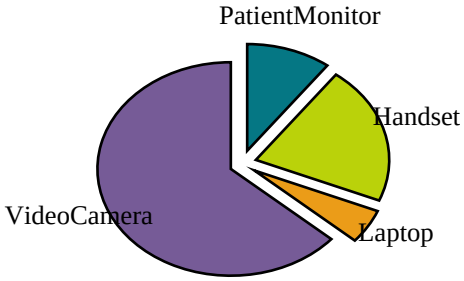
The Table below shows the percentage of Clients of each client type that satisfied the SLA

Note: If any of the traffic flows on a client dont meet the SLA the client is considered to not meet SLA

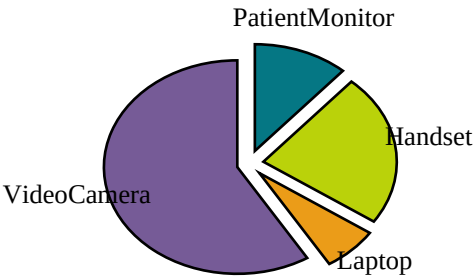
Client Type	Number of Clients	Flow Types	% of Clients that met SLA
PatientMonitor	4	UDP, TCP, TCP,	0
Handset	8	VOIP,	0
Laptop	4	HTTP, FTP, TCP, TCPVideo,	0
VideoCamera	2	RTPVideo,	0



iLoad (Total 11.79 Mbps)

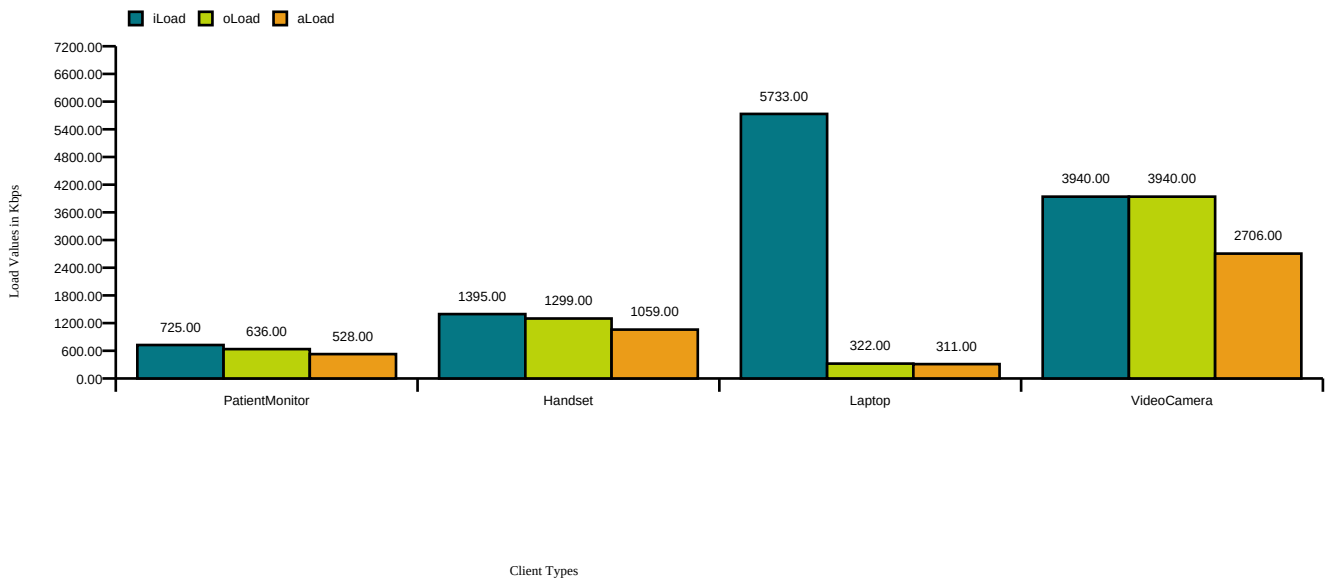


oLoad (Total 6.20 Mbps)



Achieved Load (Total 4.56 Mbps)

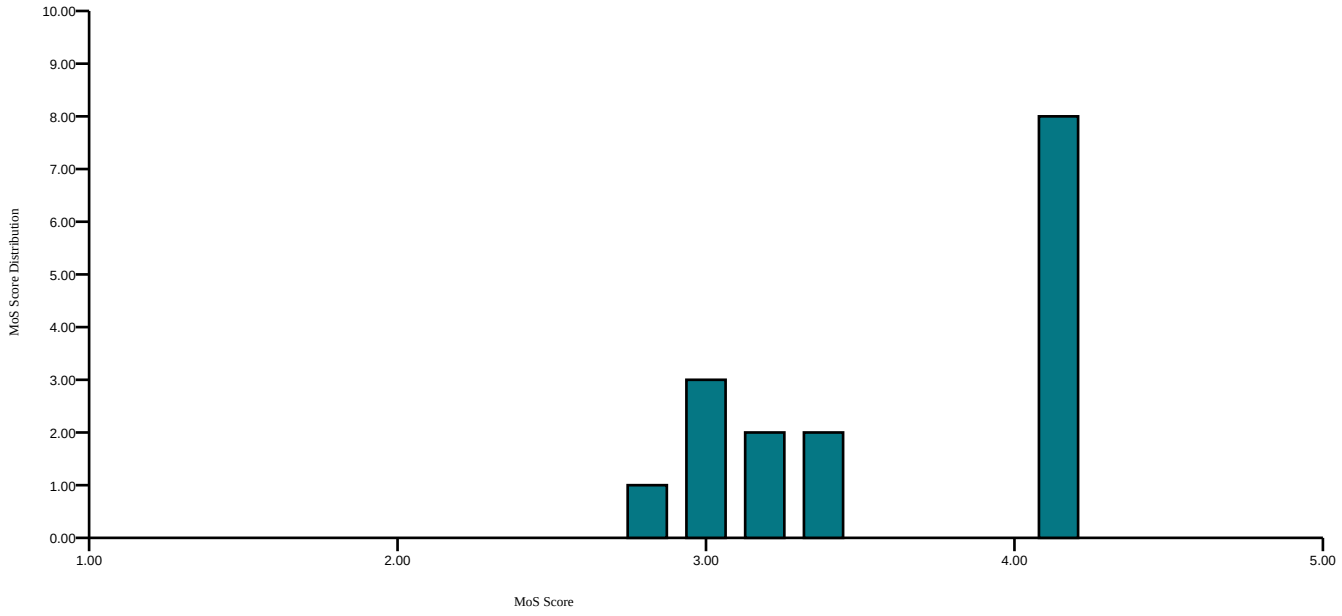
iLoad, oLoad and aLoad per Client Type



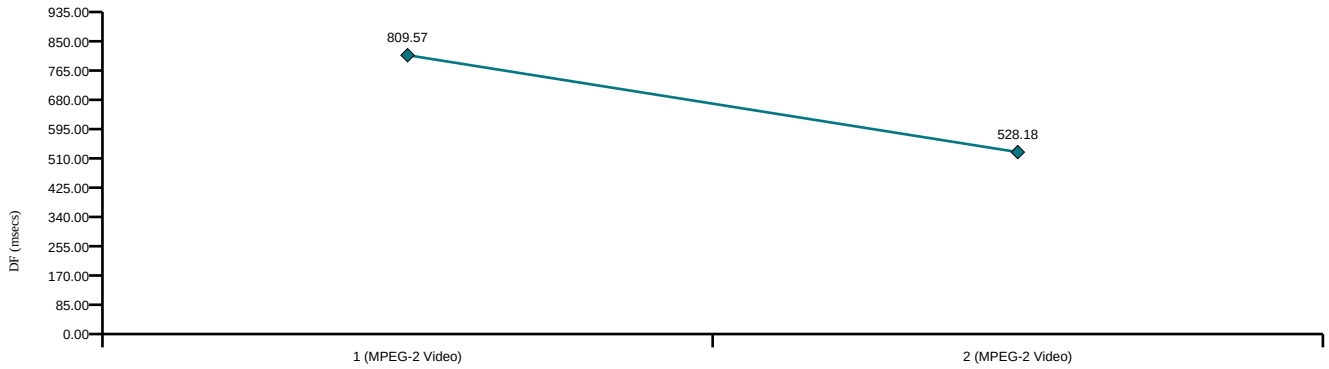
Graphs

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

MoS Score Distribution for all VOIP flows

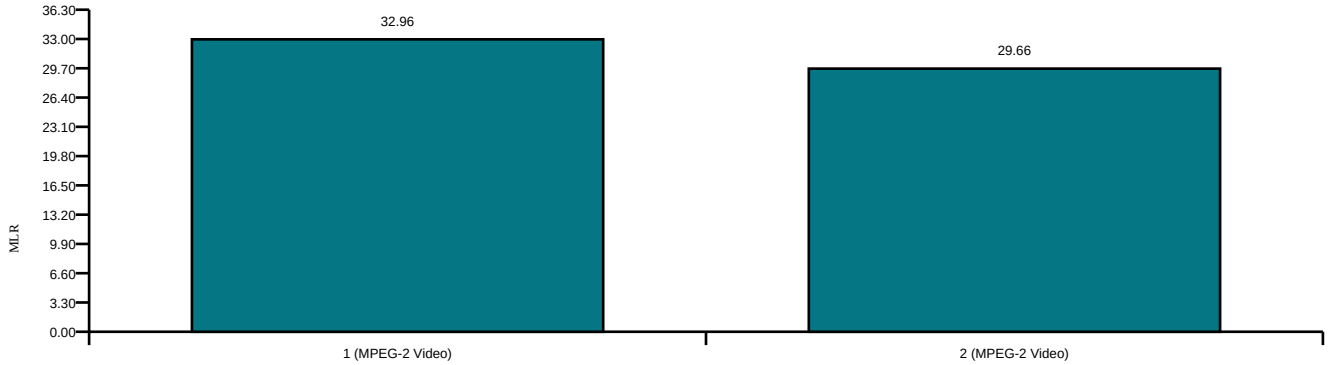


Delay Factor for RTP Video flows



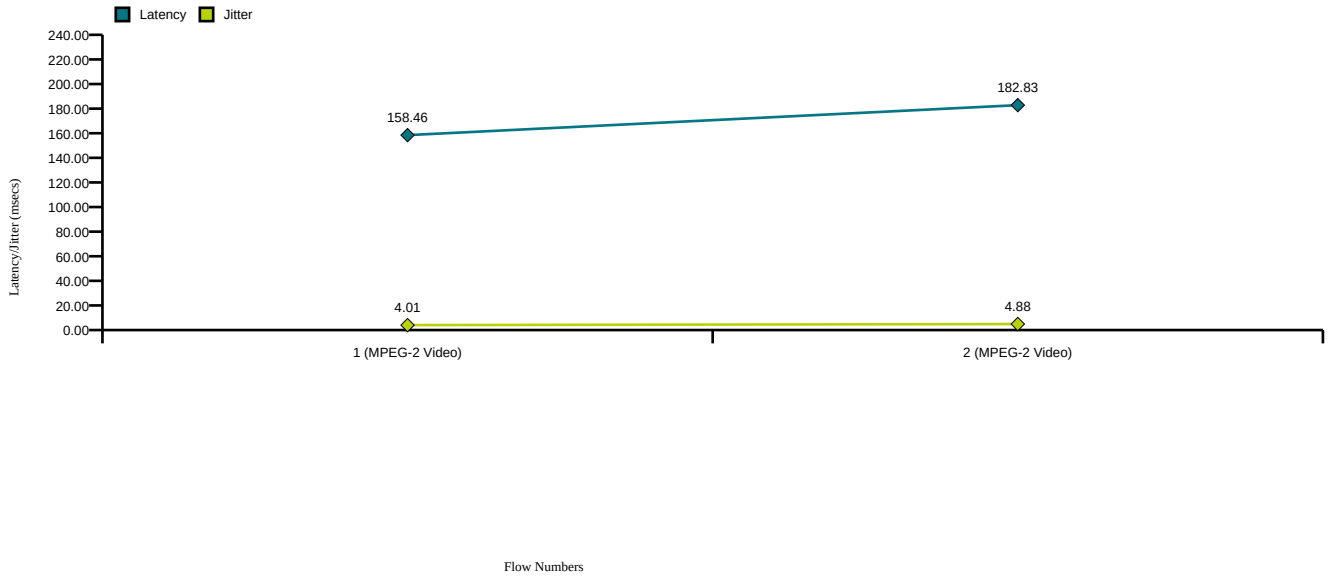
Flow Numbers

Media Loss Ratio (MLR) for RTP Video Flows



Flow Numbers

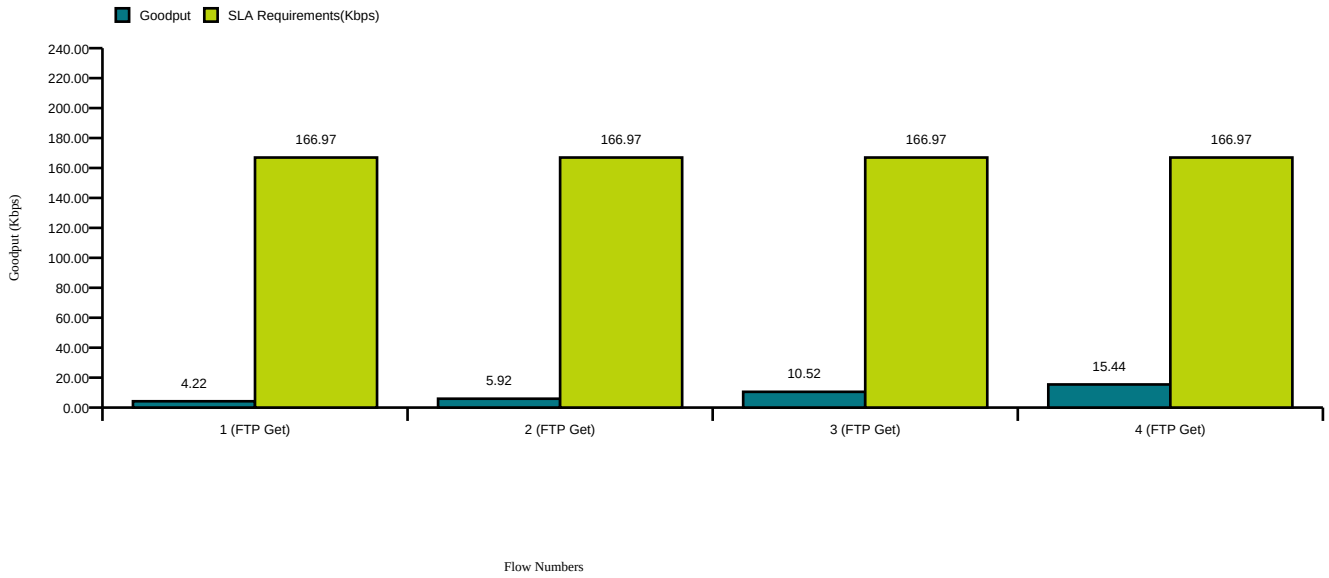
Latency and Jitter for RTP Video flows



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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.5.200 to 192.168.2.10	00:01:01:a8:05:c8 to 00:04:01:a8:02:0a	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
2	192.168.5.200 to 192.168.2.11	00:01:01:a8:05:c8 to 00:02:01:a8:02:0b	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink

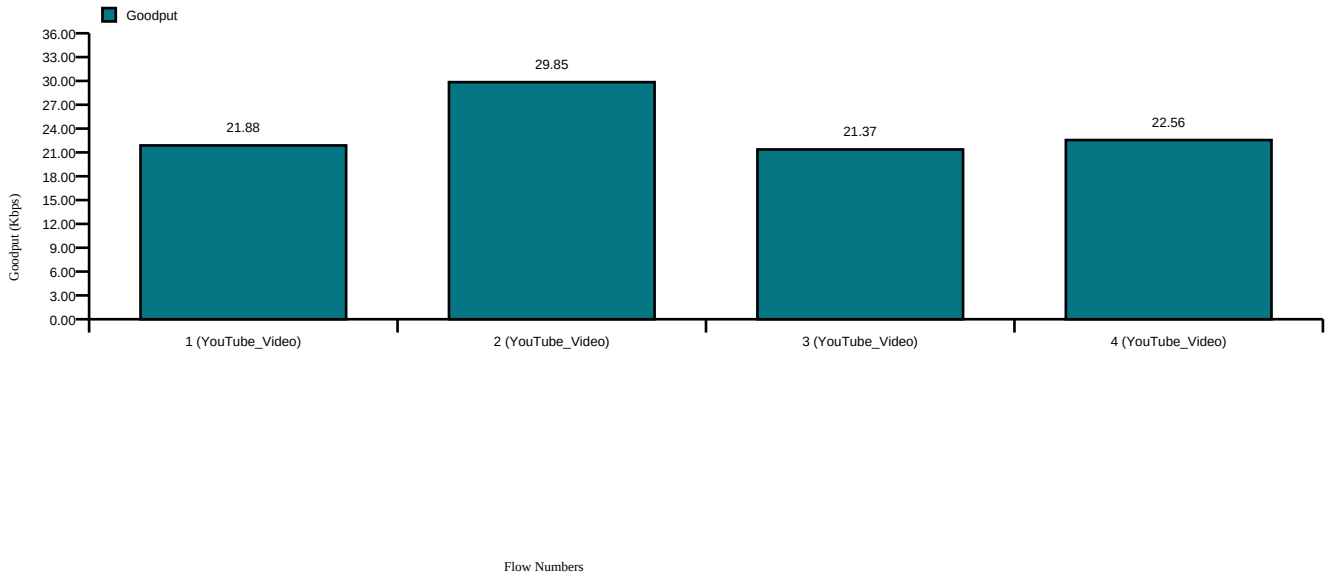
FTP Goodput



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

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.2.200 to 192.168.0.13	00:01:01:a8:02:c8 to 00:02:01:a8:00:0d	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
2	192.168.2.200 to 192.168.0.11	00:01:01:a8:02:c8 to 00:04:01:a8:00:0b	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
3	192.168.2.200 to 192.168.0.12	00:01:01:a8:02:c8 to 00:02:01:a8:00:0c	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
4	192.168.2.200 to 192.168.0.10	00:01:01:a8:02:c8 to 00:04:01:a8:00:0a	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink

TCPVideo Goodput

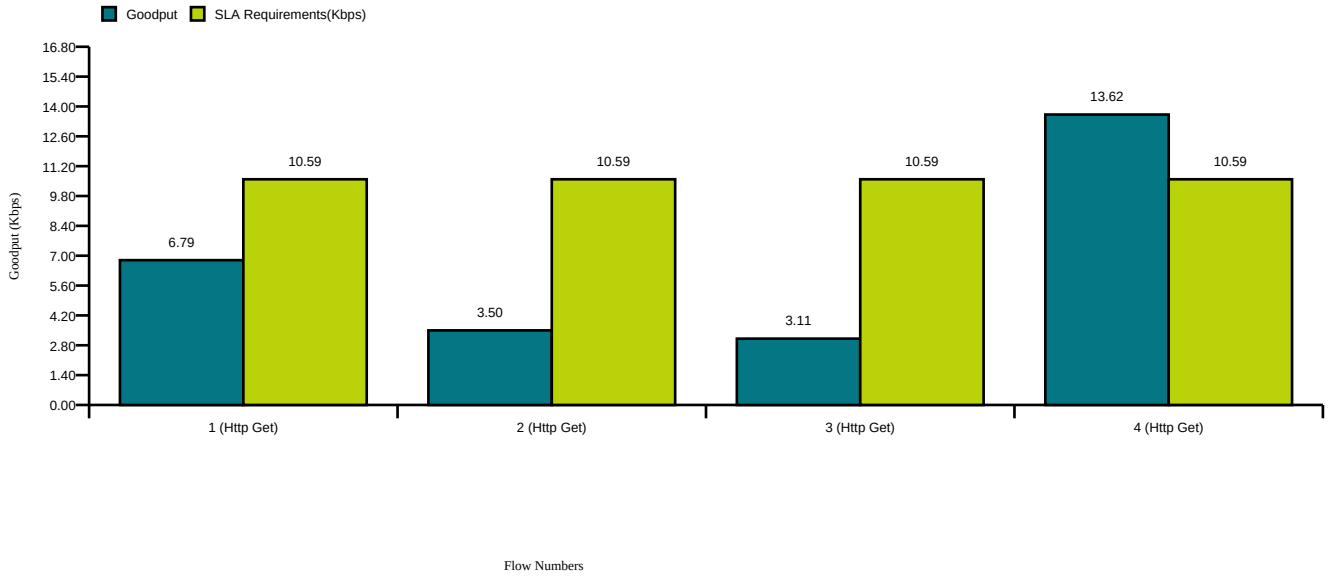


The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.3.200 to 192.168.0.12	00:01:01:a8:03:c8 to 00:02:01:a8:00:0c	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
2	192.168.3.200 to 192.168.0.10	00:01:01:a8:03:c8 to 00:04:01:a8:00:0a	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink

Flow Num	IP	MAC	Port	Network	Direction
3	192.168.3.200 to 192.168.0.13	00:01:01:a8:03:c8 to 00:02:01:a8:00:0d	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
4	192.168.3.200 to 192.168.0.11	00:01:01:a8:03:c8 to 00:04:01:a8:00:0b	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink

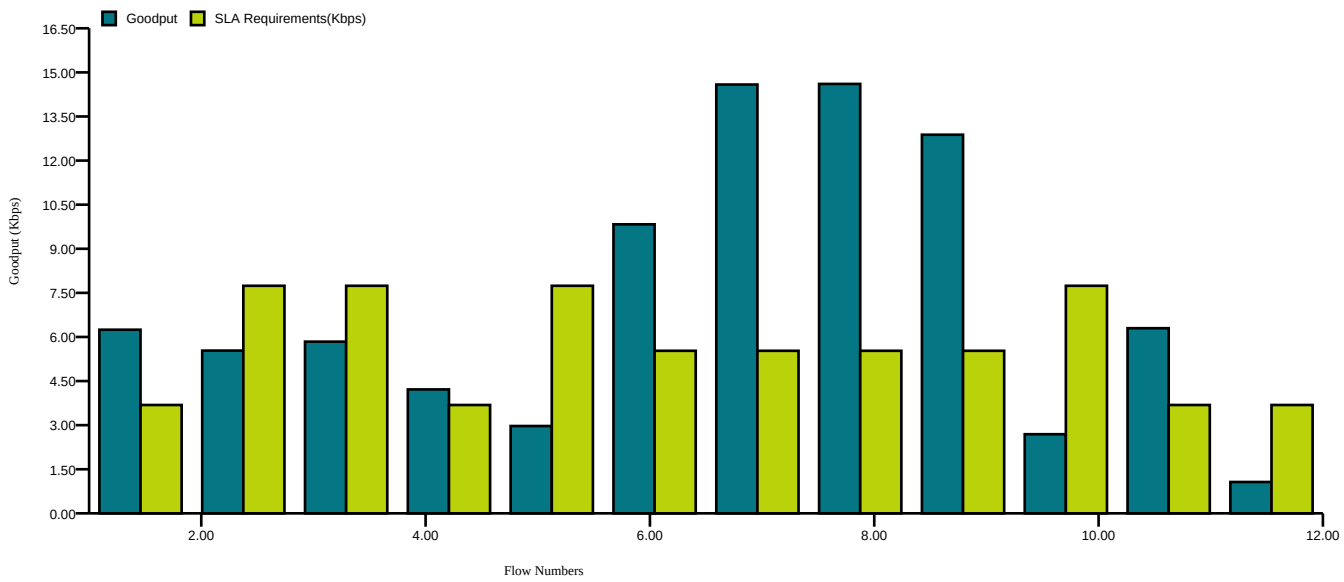
HTTP Goodput



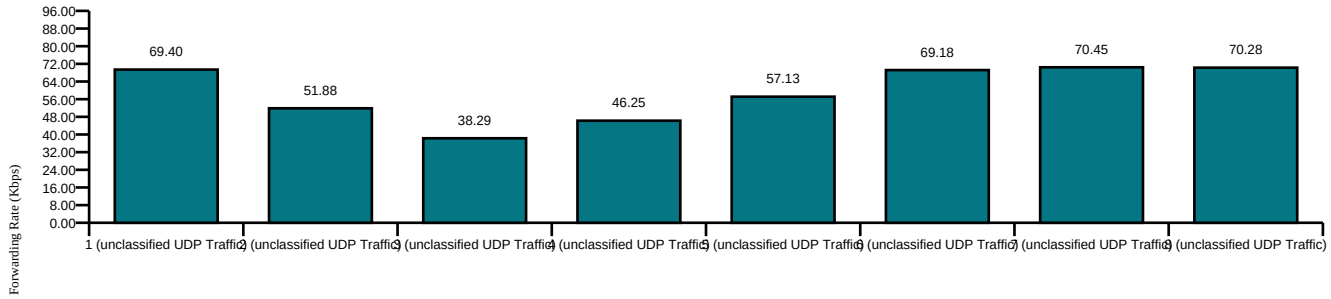
The following table shows more information about each flow of this traffic type for debugging purposes.

Flow Num	IP	MAC	Port	Network	Direction
1	192.168.3.200 to 192.168.0.11	00:01:01:a8:03:c8 to 00:04:01:a8:00:0b	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
2	192.168.3.200 to 192.168.0.10	00:01:01:a8:03:c8 to 00:04:01:a8:00:0a	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
3	192.168.3.200 to 192.168.0.13	00:01:01:a8:03:c8 to 00:02:01:a8:00:0d	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
4	192.168.3.200 to 192.168.0.12	00:01:01:a8:03:c8 to 00:02:01:a8:00:0c	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink

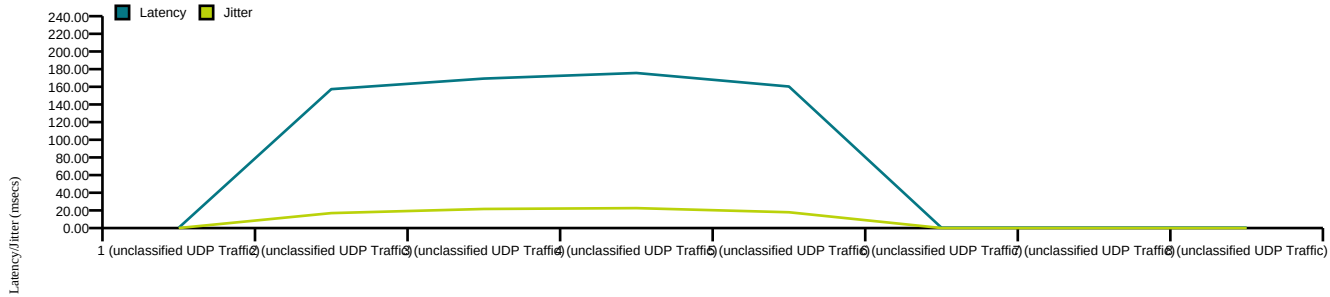
TCP Goodput



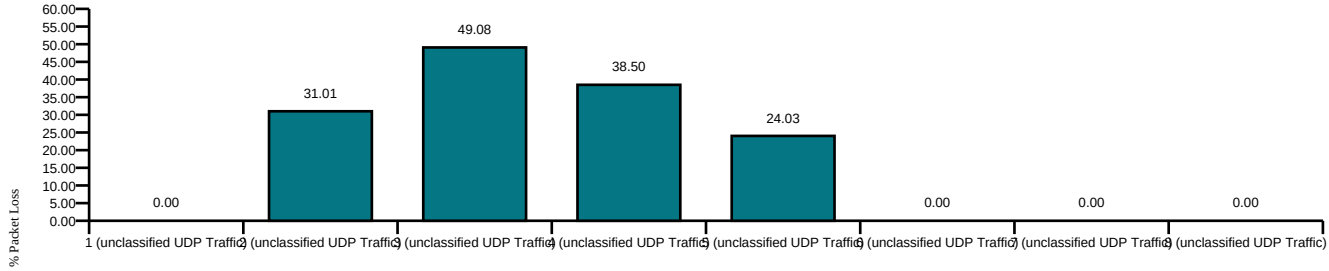
Forwarding Rate for UDP flows



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	192.168.4.13 to 192.168.4.200	00:02:01:a8:04:0d to 00:01:01:a8:04:c8	192.168.1.14_card2_port1 to 192.168.1.14_card1_port1	veriwave, 00:18:74:8a:13:10	Uplink

Flow Num	IP	MAC	Port	Network	Direction
2	192.168.4.200 to 192.168.4.11	00:01:01:a8:04:c8 to 00:04:01:a8:04:0b	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
3	192.168.4.200 to 192.168.4.13	00:01:01:a8:04:c8 to 00:02:01:a8:04:0d	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
4	192.168.4.200 to 192.168.4.12	00:01:01:a8:04:c8 to 00:02:01:a8:04:0c	192.168.1.14_card1_port1 to 192.168.1.14_card2_port1	veriwave, 00:18:74:8a:13:10	Downlink
5	192.168.4.200 to 192.168.4.10	00:01:01:a8:04:c8 to 00:04:01:a8:04:0a	192.168.1.14_card1_port1 to 192.168.1.14_card4_port1	veriwave, 00:18:74:8a:03:00	Downlink
6	192.168.4.12 to 192.168.4.200	00:02:01:a8:04:0c to 00:01:01:a8:04:c8	192.168.1.14_card2_port1 to 192.168.1.14_card1_port1	veriwave, 00:18:74:8a:13:10	Uplink
7	192.168.4.10 to 192.168.4.200	00:04:01:a8:04:0a to 00:01:01:a8:04:c8	192.168.1.14_card4_port1 to 192.168.1.14_card1_port1	veriwave, 00:18:74:8a:03:00	Uplink
8	192.168.4.11 to 192.168.4.200	00:04:01:a8:04:0b to 00:01:01:a8:04:c8	192.168.1.14_card4_port1 to 192.168.1.14_card1_port1	veriwave, 00:18:74:8a:03:00	Uplink

Test Parameters

The table below shows the input parameters for the test

Parameter	Value
WiMix Mode	ClientMix
Trial Duration	67 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 Client Mix for the test

Client Type	Traffic Profiles	Num Clients
PatientMonitor	unclassified UDP Traffic,Patient Monitor Info,Unclassified TCP	2
Handset	VOIPG711	4
Laptop	Http Get,FTP Get,SMTP,YouTube_Video	2
VideoCamera	MPEG-2 Video	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 ,
Patient Monitor Info	perLoad = 50 % (10.5 Kbps)
SMTP	perLoad = 50 % (14.0 Kbps)
Http Get	perLoad = 50 % (12.5 Kbps)
Unclassified TCP	perLoad = 50 % (5.0 Kbps)
MPEG-2 Video	Df = 150 msecs , Mlr = 10 msecs ,
unclassified UDP Traffic	Latency = 10000 msecs , Jitter = 500 msecs , PacketLoss = 10 % ,
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
192.168.1.14_card4_port1	11	00:18:74:8A:03:00	veriwave	-27.0 dBm	-27.0 dBm	-27.0 dBm
192.168.1.14_card2_port1	1	00:18:74:8A:13:10	veriwave	-31.0 dBm	-31.0 dBm	-31.0 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\20081105-123547
WiMix Version	1.0.0-WT-3.4, 2008.09.03.06
WaveTest Version	3.5.0, 2008.10.22.05

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