

MU909060A1/A2/A3

Gigabit Ethernet Tester

Network Master Series

MT9090A Mainframe

Network Master Gigabit Ethernet Tester

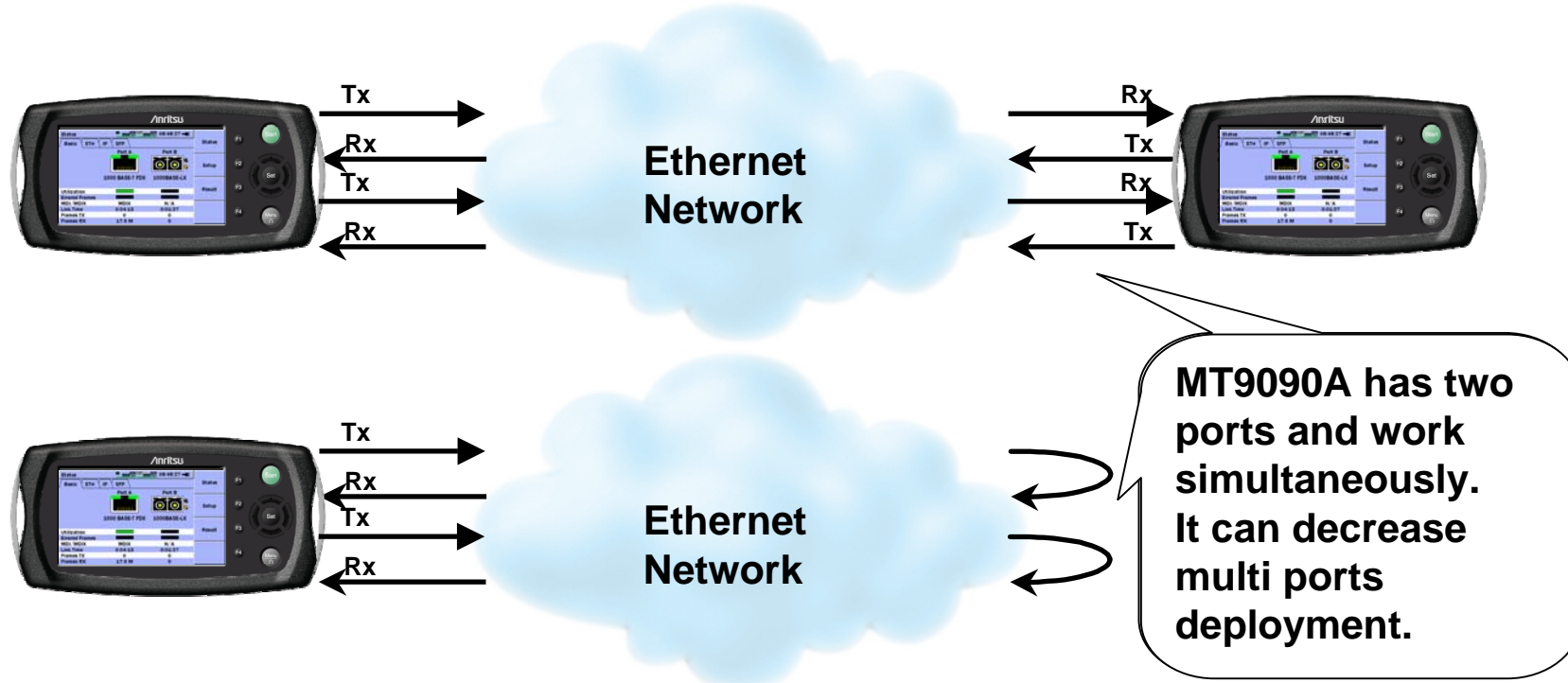


Dedicated field test solution for installation and troubleshooting Ethernet links in the access network and mobile backhaul

Network Master Gigabit Ethernet Tester

Applications – out-of-service testing.

- Typical applications:
 - ◆ Installation and commissioning testing.
 - ◆ QoS verification
 - ◆ End-to-end testing

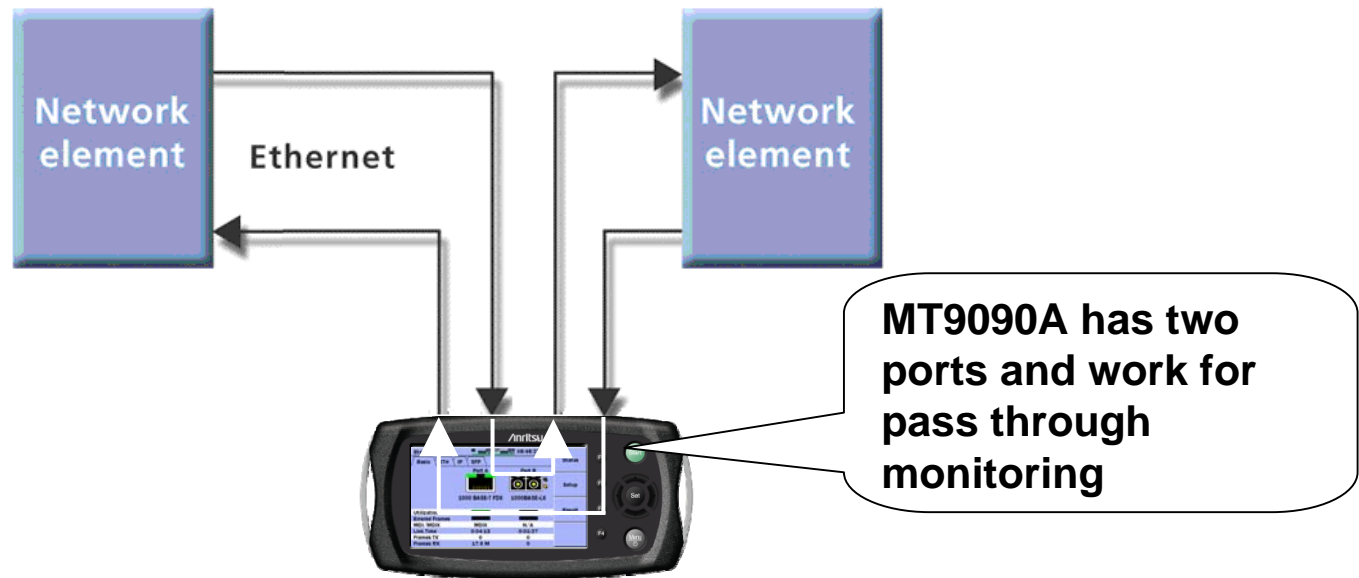


Slide 2

Network Master Gigabit Ethernet Tester

Applications – in-service testing.

- Typical applications with instrument in pass through mode:
 - ◆ Rapid in-service diagnostics
 - ◆ In-service troubleshooting
 - ◆ Live traffic analysis and statistics

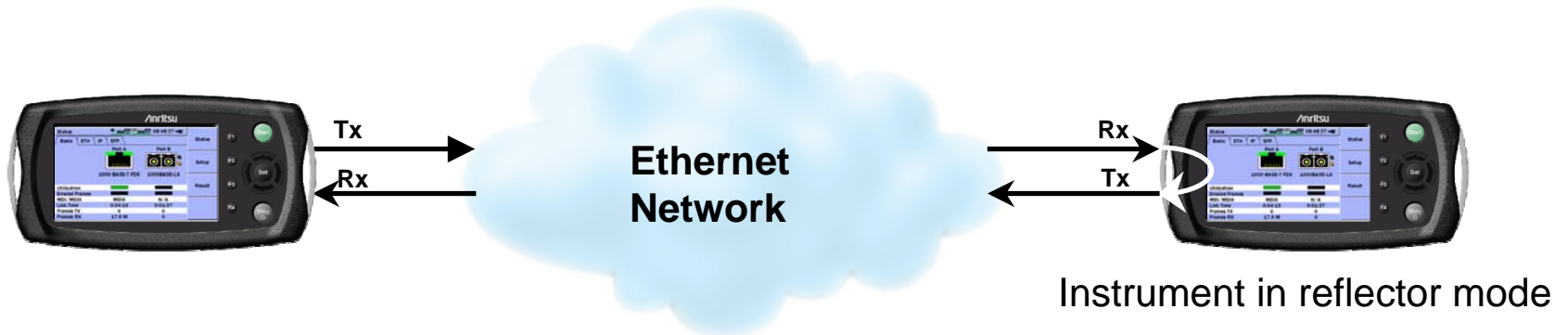


Slide 3

Network Master Gigabit Ethernet Tester

Applications – Loop-back device.

- Far end loop back for applications like:
 - ◆ Installation and commissioning testing.
 - ◆ QoS verification
 - ◆ End-to-end testing
- Instrument in reflector mode



Network Master Gigabit Ethernet Tester

Purpose-built for Testing Ethernet Links.

- Perfect solution for installation and commissioning of Ethernet links.
 - ◆ Compact and handy
- Easy to use
 - ◆ Large color screen
 - ◆ Test Automator
- Electrical cable test
- Ping test
- Bandwidth verification (RFC2544 option)
- BER testing
- Traffic generation and reception
- Multistream (option)
- Document your work with PDF and CSV reports



Network Master Gigabit Ethernet Tester

Designed For Highly Portable Field Use.

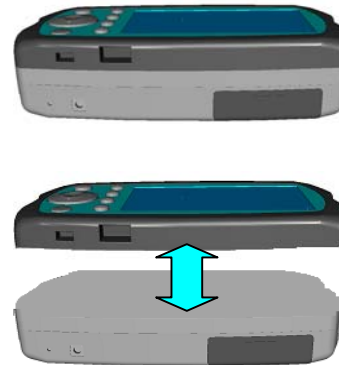
- **Easily held with one hand**
 - ◆ Palm-size (190 x 96 x 48 mm)
 - ◆ Approximately 2 lbs (800g)
- **Battery operated**
 - ◆ 2 hours typical, 4 hour recharge
- **Quick start up**
 - ◆ Start up in approx. 15 seconds
- **Rugged**
 - ◆ Sealed design – no vents or fans
- **Color indoor/outdoor display standard**
 - ◆ 4.3” high resolution
 - ◆ Large display compared to the size of the instrument



Network Master Gigabit Ethernet Tester

VALUE...without compromise!

- **Cost-effective installation and maintenance tool**
 - ◆ Soft case, manual, charger, battery are standard
 - ◆ Complete Ethernet tester with attractive price
- **User configurable (modular) platform**
 - ◆ 3 configurations
 - ◆ Optional SFP modules
 - ◆ SW option: RFC2544 test
 - ◆ SW option: Multistream
- **Complete data management**
 - ◆ Internal storage of results
 - ◆ Easy “drag and drop” transfers to PC
 - ◆ Reporting in PDF and CSV format



MU909060A1

Ports:

1xRJ45,
1x SFP

Highlights:

- For mixed networks (Optical and Electrical interfaces)
- Cost effective



MU909060A2

Ports:

2xRJ45

Highlights:

- Electrical interfaces only



MU909060A3

Ports:

2xSFP

Highlights:

- Optical and Electrical interfaces

What's new in Software Ver.2.00

- **IEEE 802.1ad,**
 - ◆ **Stacked VLAN / QinQ.**
- **MPLS tagging,**
 - ◆ **MPLS label support.**
- **ISO layer 6 support,**
 - ◆ **HTTP / FTP support.**
- **SDT time,**
 - ◆ **Service Disruption time.**
- **Channel Stats**
 - ◆ **Finding errored frames, top talkers and malicious users**
- **Thresholds,**
 - ◆ **Alarming in the interface.**
- **Trace Route,**
- **Remote GUI control and expanded language support,**

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IEEE 802.1ad

- Stacked VLAN or QinQ support (optional),
 - ◆ The IEEE 802.1ad standard defines VLAN, (IEEE 802.1q) VLAN stacked inside VLAN's,
 - ◆ MT9090 GigE allows three layers of VLAN's.
- Configure RFC2544 (optional) within a stacked VLAN,
- Configure a single stream or MultiStream (optional) within stacked VLAN,
- View results relative to VLAN's
 - ◆ Untagged frames,
 - ◆ Single VLAN frames,
 - ◆ Multiple VLAN frames.
- Apply filters based on stacked VLAN's.

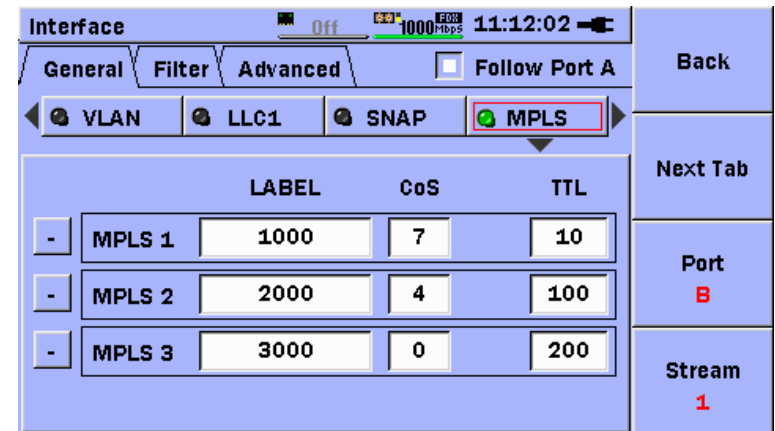
	TPID	PRI	CFI	VID	
-	VLAN 1	0x8100	3	<input type="checkbox"/>	2001
-	VLAN 2	0x9100	4	<input type="checkbox"/>	2002
-	VLAN 3	0x9300	5	<input type="checkbox"/>	2003

	Port A	Port B
Total	0	13.392859 M
Unicast	0	13.392858 M
Multicast	0	0
Broadcast	0	1
UnTagged Frames	0	0
Single VLAN Frames	0	0
Multiple VLAN Frames	0	13.392859 M
UnLabeled Frames	0	13.392859 M
Single MPLS Frames	0	0
Multiple MPLS Frames	0	0
Pause Frames	0	0

Network Master Gigabit Ethernet Tester

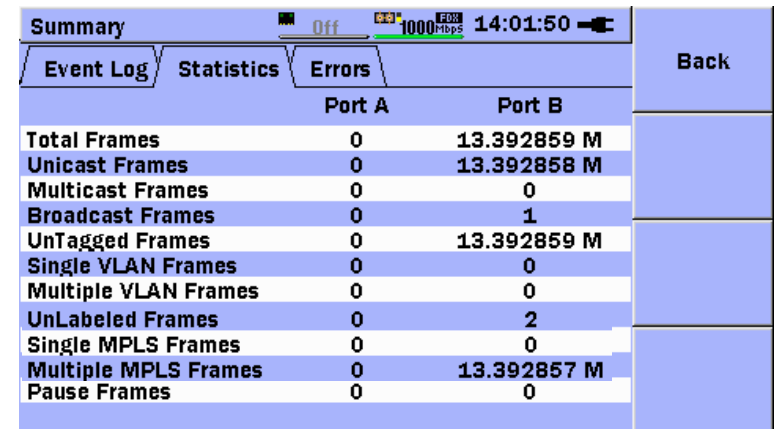
MPLS Tagging.

- Support for MPLS labels (optional),
 - ◆ The ITEF maintain this standard,
 - ◆ MT9090 GigE allows three layers of label tags.
- Configure RFC2544 (optional) within a MPLS labels,
- Configure a single stream or MultiStream (optional) within MPLS labels,
- View results relative to MPLS labels,
 - ◆ Single MPLS frames,
 - ◆ Multiple MPLS frames.
- Apply filters based on MPLS labels.



The screenshot shows the 'Interface' configuration page for a 1000 Mbps port. The 'MPLS' tab is selected, showing a table of three MPLS labels. The 'Follow Port A' checkbox is unchecked. The right sidebar shows 'Back', 'Next Tab', 'Port B', and 'Stream 1'.

	LABEL	CoS	TTL	
-	MPLS 1	1000	7	10
-	MPLS 2	2000	4	100
-	MPLS 3	3000	0	200



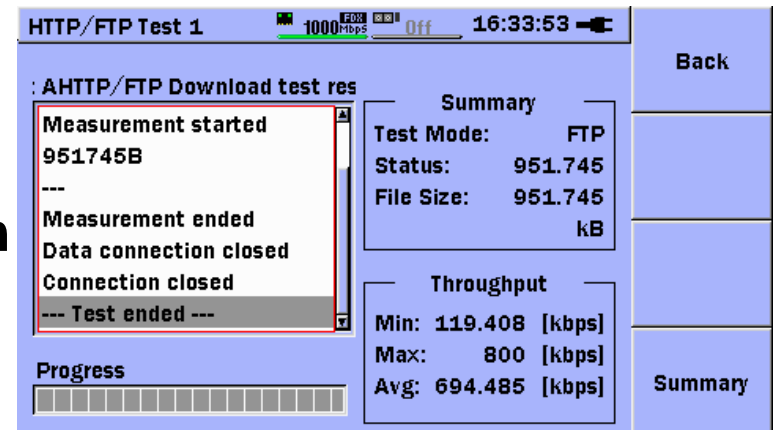
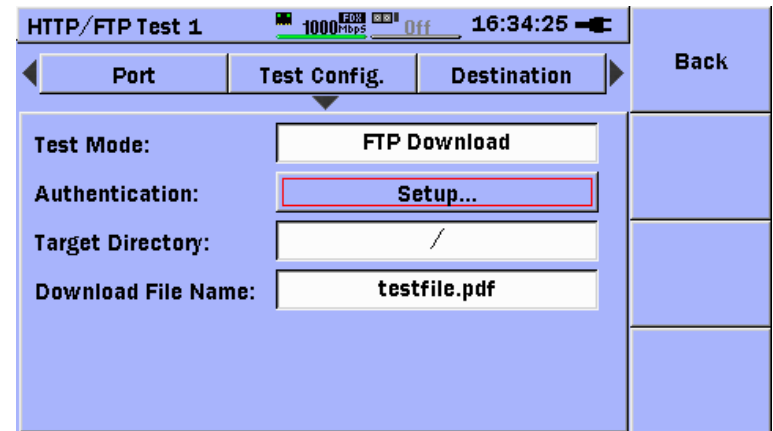
The screenshot shows the 'Summary' page with the 'Statistics' tab selected. It displays a table of traffic statistics for Port A and Port B. The right sidebar shows 'Back'.

	Port A	Port B
Total Frames	0	13.392859 M
Unicast Frames	0	13.392858 M
Multicast Frames	0	0
Broadcast Frames	0	1
UnTagged Frames	0	13.392859 M
Single VLAN Frames	0	0
Multiple VLAN Frames	0	0
UnLabeled Frames	0	2
Single MPLS Frames	0	0
Multiple MPLS Frames	0	13.392857 M
Pause Frames	0	0

Network Master Gigabit Ethernet Tester

ISO layer 6 support.

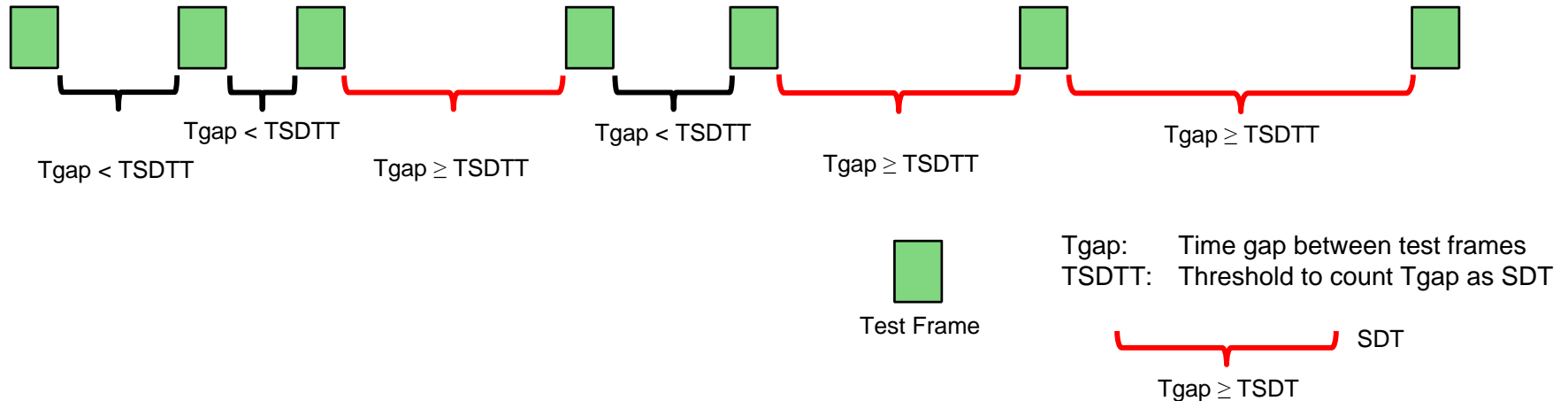
- Support HTTP and FTP transfers,
 - ◆ Tests the download speed via HTTP or FTP.
 - ◆ Full line rate measurement ability (assuming server capable of it),
- Simple one ended test to allow the user to quickly understand network download limits,
 - ◆ Able to connect to standard FTP or HTTP server,
 - ◆ Single end single engineer test, offering quick proof of network speed for the Telecom operators customer.



Network Master Gigabit Ethernet Tester

SDT time.

- **Service Disruption Time (SDT),**
 - ◆ **Measuring the time between frames looking for larger gaps than normal in the traffic flow and the configured thresholds.**
 - ◆ **Network quality for time-severe streams like voice and video can be measured.**
 - ◆ **Total time of SDT and the number of the counted gaps displayed.**



Network Master Gigabit Ethernet Tester

Channel Stats.

- Identifying the root cause of network issues,
 - ◆ Filter streams and monitor up to 63 streams,
 - Errored streams,
 - Top talkers,
 - Network attack.
 - ◆ Select up to three Filter keys,
 - MAC/IP address,
 - VLAN tag,
 - MPLS label,
 - TCP/UDP port,
 - An more.
 - ◆ Monitoring values,
 - Frames,
 - Errored frames,
 - Frame size distribution.

Generator 1 1000Mbps On 03:34:59

Thresholds SDT Channel Stats

Key 1 Key 2 Key 3
MAC DST MAC SRC IPv4 SRC

Mode: Order of Arrival
Sort On: First Key
Main Counter: Frames

Generator 1 1000Mbps On 03:41:22

Current Cumulative Graph SDT Channel Stats

CH	Frames	MAC SRC
1	88.088 k	Overflow
2	900	00:00:00:00:10:1C
3	900	00:00:00:00:10:1D
4	900	00:00:00:00:10:1E
5	899	00:00:00:00:10:1F
6	899	00:00:00:00:10:20
7	899	00:00:00:00:10:21

Generator 1 1000Mbps On 03:41:27

Current Cumulative Graph SDT Channel Stats

Channel: 2 of 64

MAC SRC	00:00:00:00:10:1C
MAC DST	00:00:00:00:00:01
IPv4 SRC	020.020.020.002
Frames	899
Bits	5.846864 M
Errors	0
[64-127]	26
[128-255]	56
[256-511]	155
[512-1023]	335
[1024-Jumbo]	327
>Jumbo]	0

Port A
Mode Current

Network Master Gigabit Ethernet Tester

Thresholds

- Set alarm levels on the unit,
 - ◆ Configure thresholds for different areas including,
 - Frame rate,
 - Utilization,
 - Throughput,
 - Errors,
 - Frame loss,
 - SDT.
- Results shown,
 - ◆ During the test graphically with green or red lines indicating the settings,
 - ◆ In the overview window with Pass Fail results.
 - ◆ Exceeded thresholds are recorded in the Event log.

The screenshot displays the Network Master Gigabit Ethernet Tester interface, showing various configuration and results screens. The interface is divided into several sections:

- Generator 1:** Shows the current status (Off) and a speed indicator (1000 Mbps). The time is 08:34:17. The "Thresholds" tab is selected, showing "Current Use Log" and "Average Use Log" checkboxes, and a "Frames/Sec" threshold set to 150000000.
- Generator 1 (Overview):** Shows the current status (Off) and a speed indicator (1000 Mbps). The time is 08:34:49. The "Current" tab is selected, showing "TX Utilization (%)", "TX Throughput (Mbps)", and "RX Utilization (%)" graphs. The "TX Utilization (%)" graph shows a bar at 100%.
- Result overview:** Shows the current status (Off) and a speed indicator (1000 Mbps). The time is 16:35:16. The "Test schedule" table shows the following results:

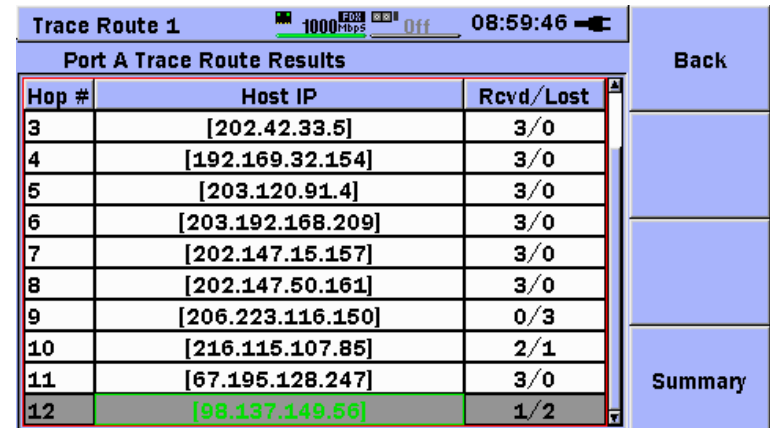
State	Result	Test schedule
●	PASS	RFC2544 Throughput 1
●	PASS	RFC2544 Latency 1
●	FAIL	RFC2544 Burst 1
- Summary:** Shows the current status (Off) and a speed indicator (1000 Mbps). The time is 08:36:09. The "Event Log" tab is selected, showing the following events:

Time	Description
08:34:37	Wed Sep 01 2010 Test started
08:34:37	Generator test started
08:34:40	violation: current throughput percentage (76)
08:34:44	violation: current utilization percentage (100)
08:34:48	Generator test stopped
08:34:51	Wed Sep 01 2010 Test stopped

Network Master Gigabit Ethernet Tester

Trace Route.

- Trace to an end IP address viewing all IP addresses it passes to reach the end destination,
 - ◆ Configure,
 - Number or attempts per IP,
 - Maximum number of hops,
 - Number of pings per host,
 - Timeout per ping.
- Results are seen for each host passed, the number of received and lost pings to/from each host.
- A quick simple and effective way to find the location of network failure.



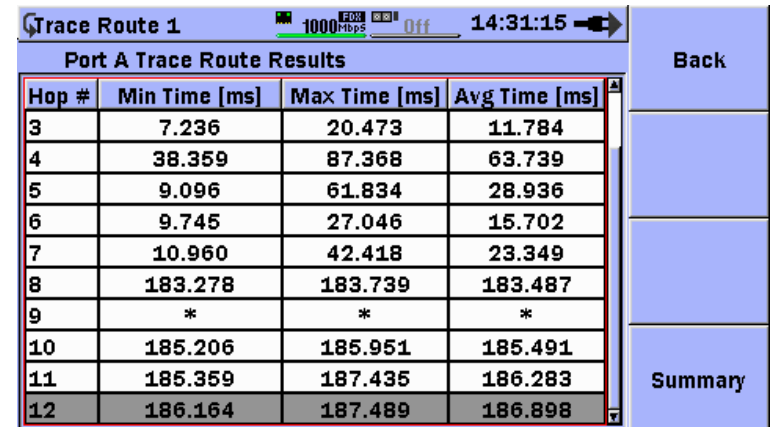
Trace Route 1 1000Mbps Off 08:59:46

Port A Trace Route Results

Hop #	Host IP	Rcvd/Lost
3	[202.42.33.5]	3/0
4	[192.169.32.154]	3/0
5	[203.120.91.4]	3/0
6	[203.192.168.209]	3/0
7	[202.147.15.157]	3/0
8	[202.147.50.161]	3/0
9	[206.223.116.150]	0/3
10	[216.115.107.85]	2/1
11	[67.195.128.247]	3/0
12	[98.137.149.56]	1/2

Back

Summary



Trace Route 1 1000Mbps Off 14:31:15

Port A Trace Route Results

Hop #	Min Time [ms]	Max Time [ms]	Avg Time [ms]
3	7.236	20.473	11.784
4	38.359	87.368	63.739
5	9.096	61.834	28.936
6	9.745	27.046	15.702
7	10.960	42.418	23.349
8	183.278	183.739	183.487
9	*	*	*
10	185.206	185.951	185.491
11	185.359	187.435	186.283
12	186.164	187.489	186.898

Back

Summary

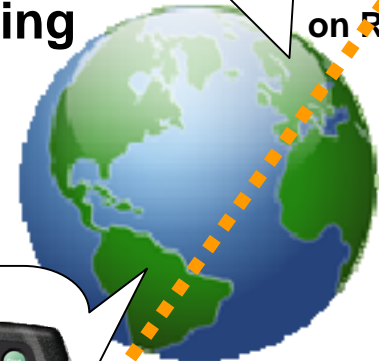
Network Master Gigabit Ethernet Tester

Remote GUI and Language support.

- Remote control the unit via any PC (Option),
 - ◆ No software required on the PC,
 - ◆ Connect via web browser to the MT9090 GigE,
 - Uses port 80 to initiate the connection.
 - ◆ Control the unit as if its sitting in front of you,
 - MT9090 GigE appears on your PC including control buttons,
 - Control the unit using buttons and menu's the same as the actual unit,
 - ◆ Upload configuration settings from the PC to the MT9090 GigE,
 - ◆ Download results files and reports from the MT9090 GigE to your PC.
- Expanded Language support including,
 - ◆ English, Japanese, Chinese (Simplified & Traditional), Spanish, German, Korean and French.



GUI Emulation on Remote PC



Network Master Gigabit Ethernet Tester

MT9090A series lineup.

- Weighing only 700 to 800 g (2 lbs.), Anritsu's pocket-size MT9090A Network Master series makes child's play of daily network installation and maintenance. Its innovative GUI design uses a 4.3-inch high resolution display for easy viewing both indoors and in direct sunlight.



GigE
10M/100M/Gigabit Ethernet Tester



uOTDR
OTDR for FTTH



OCA
CWDM Optical Channel Analyzer



DCFL
Drop Cable Fault Locator

Appendix

Technical details.

- **Interfaces**

- 10/100/1000 Mbps Electrical, 100/1000 Mbps Optical
- FDX / HDX (10/100 EI.)

- **Modes**

- Ethernet – general Ethernet tester
- Reflector – act as loop-back device for another tester
- Pass Through mode – live traffic analysis

- **Encapsulations**

- EtherType II (DIX v.2), IEEE 802.3 with 802.2(LLC1), IEEE 802.3 with SNAP

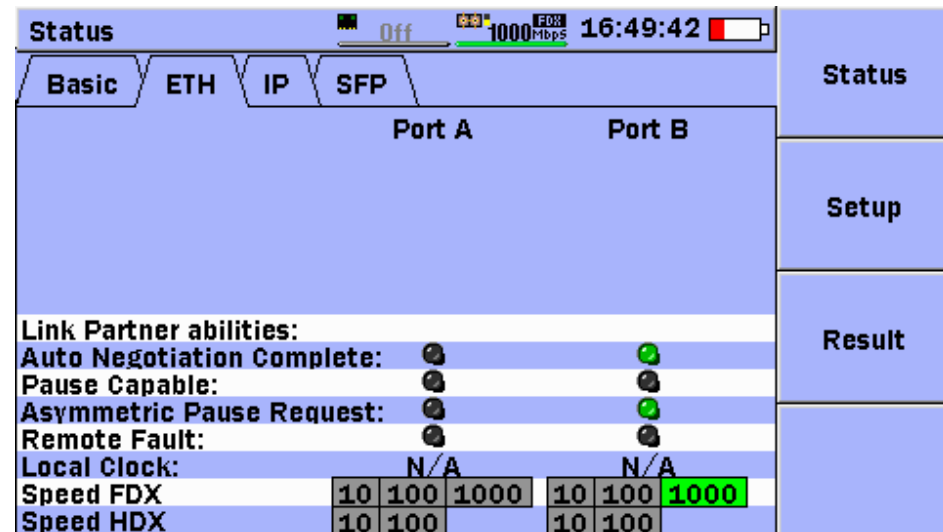
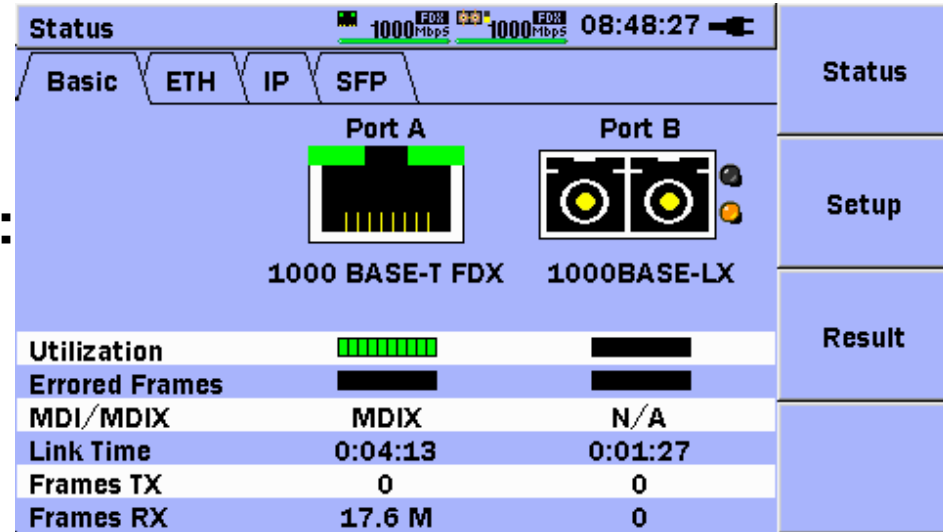
- **VLAN tagging**

- **Configurable Ethernet (MAC) and IP source and destination addresses (supports IPv4 and IPv6), UDP/TCP port numbers and DSCP/TOS byte**

Network Master Gigabit Ethernet Tester

Check connection.

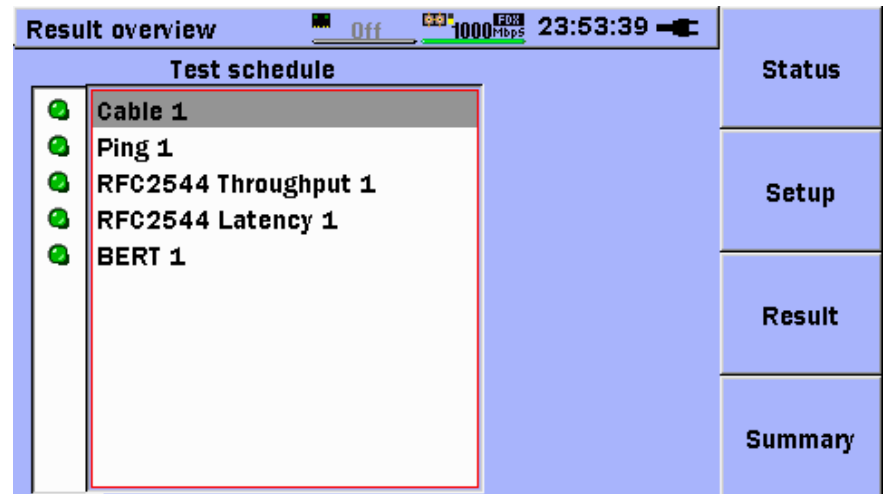
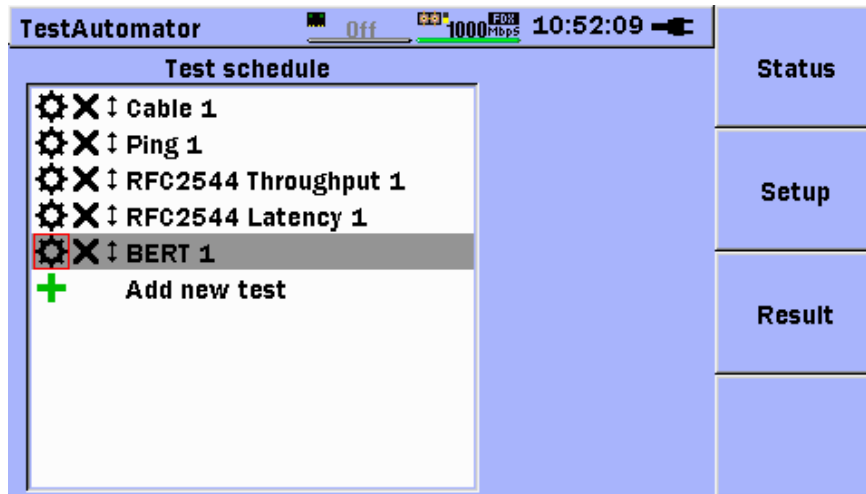
- Status screens
 - ◆ Give quick overview on:
 - Port status
 - Autonegotiate results
 - IP addresses used
 - Optical modules:
 - Tx and Rx levels
 - Wavelength
 - Max. reach from Tx
 - Ethernet compliance
 - Vendor name



Network Master Gigabit Ethernet Tester

Test Automator.

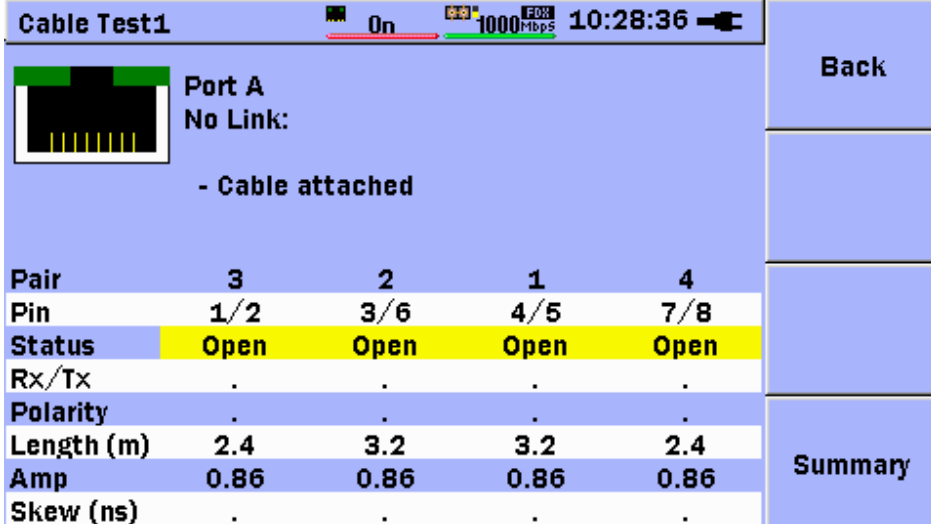
- Easy and quick execution of a series of tests
- Pass/fail indicators makes it easy to use for any skill level, reducing the need for training.



Network Master Gigabit Ethernet Tester

Cable test feature for electrical Ethernet. (MU909060A1/A2)

- Some problems on an electrical Ethernet connection are basic:
 - ◆ Short circuits of a wire pair
 - ◆ Breaks of a wire pair
- The cable test facility makes it easy to identify such failures.
- The cable test facility also indicates the distance from the instrument to the fault



Cable Test1 On 1000Mbps 10:28:36

Port A
No Link:
- Cable attached

Pair	3	2	1	4
Pin	1/2	3/6	4/5	7/8
Status	Open	Open	Open	Open
Rx/Tx	.	.	.	.
Polarity	.	.	.	.
Length (m)	2.4	3.2	3.2	2.4
Amp	0.86	0.86	0.86	0.86
Skew (ns)	.	.	.	.

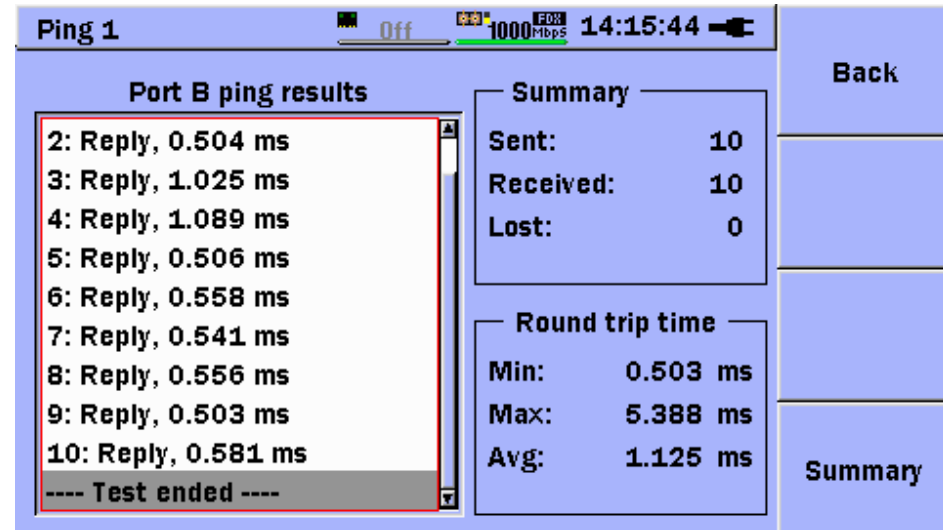
Back

Summary

Network Master Gigabit Ethernet Tester

Ping test.

- Ping test applications
 - ◆ Installation and commissioning
 - ◆ Troubleshooting and maintenance
- Well-known tool for testing:
 - ◆ Continuity
 - ◆ Connectivity
 - ◆ Response time



Network Master Gigabit Ethernet Tester

RFC 2544 Test option.

- RFC 2544 defines tests to be used for describing the performance characteristics of these network devices
- Typically used for bringing into service
- Tests include measurement of:
 - ◆ Throughput
 - For selected layer
 - ◆ Frame Loss
 - ◆ Latency
 - ◆ Packet jitter
 - ◆ Burstability

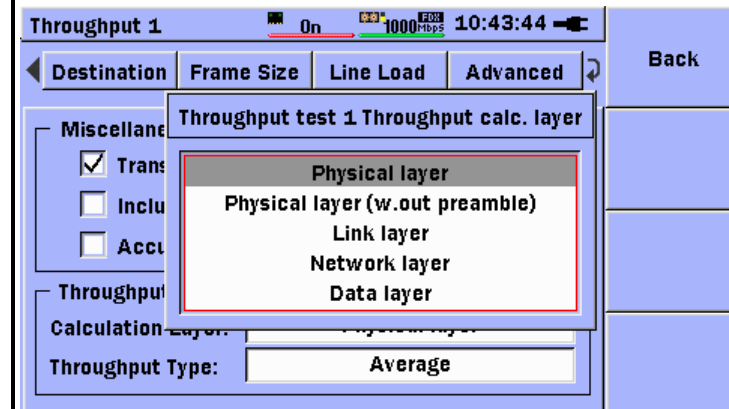
Throughput 1		Off	1000Mbps	14:12:27	Back
Repetition:Step		Tx (Port B)			Back
1: 1	1: 2	Tx Utilization(Mbps)	1000.0000		
		Tx Frame Size(bytes)	64		
		Tx Total Frames	14.880952 M		
		Tx Frame Rate(Fps)	1.488095 M		
		Rx (Port B)			
		Rx Total Frames	14.880952 M		
		Rx Utilization(%)	100.0000		
		Rx Throughput(Mbps)	857.1433		
		Rx Frames Lost Min	0		
		Rx Frames Lost Max	0		
		Rx Frames Lost Avg	0		
		Rx Lost Rate Min(%)	0.0	Summary	
		Rx Loss Rate Max(%)	0.0		
		Rx Loss Rate Avg(%)	0.0		

Network Master Gigabit Ethernet Tester

Layered throughput analysis.

- User selects layer for which throughput is calculated
 - ◆ To get throughput as perceived by a customer

Frame representation										Throughput Calculation	
IFG	Pre- amble	MAC head	VLAN (opt)	LLC (opt)	SNAP (opt)	IP head	UDP TCP	PAYLOAD	CRC	Data layer	↑ ↓ UDP or TCP must be activated
IFG	Pre- amble	MAC head	VLAN (opt)	LLC (opt)	SNAP (opt)	IP head	UDP TCP	PAYLOAD	CRC	Network layer	
IFG	Pre- amble	MAC head	VLAN (opt)	LLC (opt)	SNAP (opt)	IP head	UDP TCP	PAYLOAD	CRC	Link layer	
IFG	Pre- amble	MAC head	VLAN (opt)	LLC (opt)	SNAP (opt)	IP head	UDP TCP	PAYLOAD	CRC	Physical Layer no preamble	
IFG	Pre- amble	MAC head	VLAN (opt)	LLC (opt)	SNAP (opt)	IP head	UDP TCP	PAYLOAD	CRC	Physical Layer	
Included in throughput calculation											



Network Master Gigabit Ethernet Tester

Packet jitter measurement.

- Packet jitter and latency can be a significant problem for services like Voice over IP
- Packet jitter can be measured in the RFC 2544 tests together with latency

Latency 1		Off	1000Mbps	14:16:18	
		Tx (Port B)			Back
Repetition:Step	Tx Utilization(Mbps)	900.0000			
1: 1	Tx Frame Size(bytes)	64			
1: 2	Tx Total Frames	13.392857 M			
	Tx Frame Rate(Fps)	1.339285 M			
		Rx (Port B)			
	Rx Total Frames	13.392857 M			
	Rx Utilization(%)	90.0001			
	Rx Throughput(Mbps)	771.4293			
	Rx Jitter Min(us)	0.0			
	Rx Jitter Max(us)	0.0			
	Rx Jitter Avg(us)	0.0			
	Rx Latency Min(us)	1.5			Summary
	Rx Latency Max(us)	1.5			
	Rx Latency Avg(us)	1.5			

Network Master Gigabit Ethernet Tester

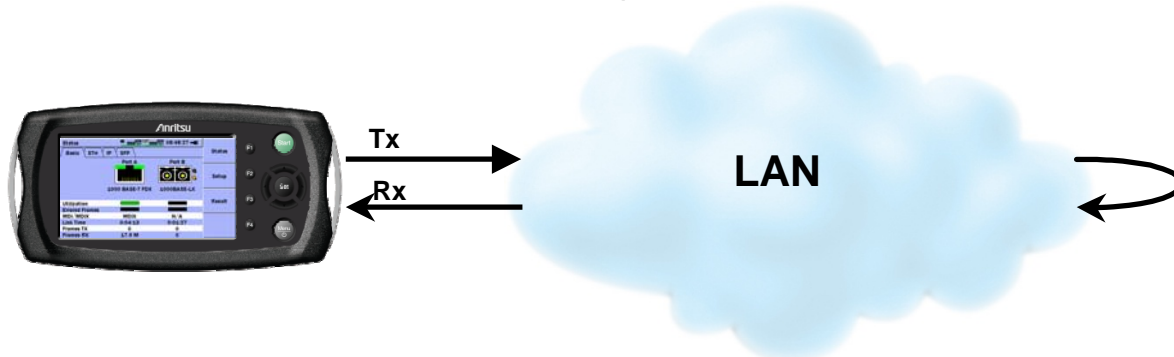
RFC 2544 Router Latency test.

- Network layer latency testing from the Network Master without use of a reflector
 - ◆ Based on ping requests

Latency 1		Off	1000Mbps	11:06:43	
Repetition:Step 1: 1	Tx (Port B)				Back
	Tx Utilization(kbps)	2.0000			
	Tx Frame Size(bytes)	64			
	Tx Total Frames	29			
	Tx Frame Rate(Fps)	2.000000			
	Rx (Port B)				
	Rx Total Frames	58			
	Rx Utilization(%)	0.0019			
	Rx Throughput(kbps)	2.5698			
	Rx Jitter Min(us)	1631.8			
	Rx Jitter Max(us)	15553.9			
	Rx Jitter Avg(us)	6638.3			
	Rx Latency Min(us)	1.5			Summary
	Rx Latency Max(us)	15555.4			
Rx Latency Avg(us)	15555.4				

Why the RFC 2544 end-to-end test?

- Typical test setup with one instrument and reflection or loop-back is OK for symmetrical links:



- For Ethernet links carried over asymmetrical connections (xDSL, WIMAX) throughput tests will only reflect the performance of the direction of the link with lowest capacity.
- For symmetrical the typical test setup will not identify transmission performance differences between the two directions in a link

Network Master Gigabit Ethernet Tester

RFC 2544 end-to-end test.

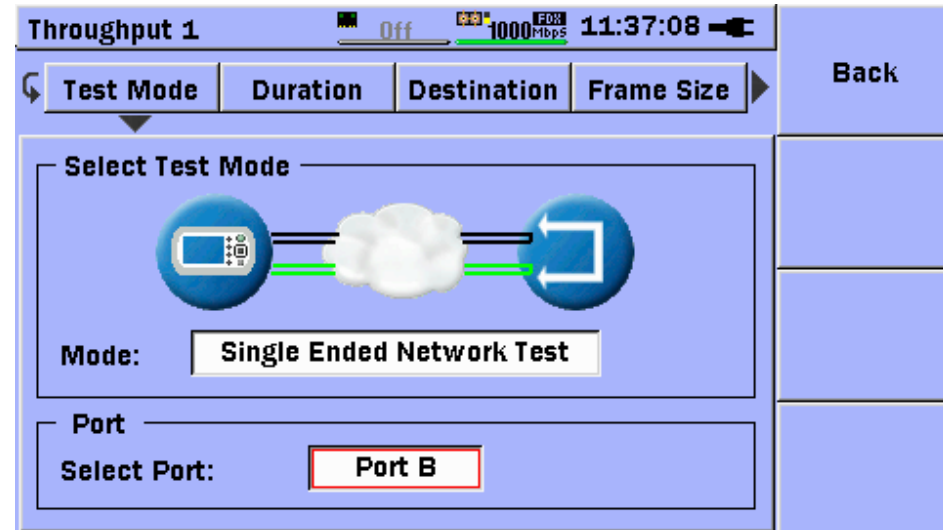
- **RFC 2544 end-to-end test with master/slave relation**
 - ◆ **Needed for test of Ethernet links carried over asymmetrical connections**
 - ◆ **Will identify transmission performance differences between the two directions in a link**
 - ◆ **The user sets up the test in the master instrument which exchanges setup and result with the remote slave instrument.**
 - ◆ **Test of Throughput, Frame Loss and Burstability**



Network Master Gigabit Ethernet Tester

RFC 2544 setup.

- Graphical overview of the selected test mode
 - ◆ Throughput and Burst tests:
 - Switch/Router test
 - Single-ended network test
 - End-to-end
 - ◆ Latency tests:
 - Switch/Router test
 - Single-ended network test
 - Router latency
- Versatile test condition setup – supports from very thorough testing to fast testing with a limited number of conditions



Network Master Gigabit Ethernet Tester

BER tests.

- Traditional test of physical connection
- Generation and detection of test patterns
 - ◆ Framed with IP header and maybe UDP/TCP header
 - ◆ Count of errors in received test pattern
 - ◆ Unframed
- Count of:
 - ◆ Pattern errors
 - ◆ Sequence errors
 - ◆ Loss of sequence synchronization.
 - ◆ Frame loss
 - ◆ Frame loss seconds
- Errors or alarms may be inserted into the test traffic

BERT 1		Off	1000Mbps	14:16:34	
					Back
Port B Results					
Pattern Bit Count	7.04306 G				Stimuli
Pattern Errors	0				
Pattern Errors(%)	0.00000				
Seq. Errors	0				
Seq. Sync. Lost	0				
Frame Loss	0				
Frame Loss Seconds	0				

Network Master Gigabit Ethernet Tester

Generator/Monitor tests.

- **Generation of Ethernet traffic**
- **Configuration of streams if multistream option is installed**
- **Monitor-only for analyzing live traffic**

Generator 1 Off On 08:38:00 ■■■

Mode/Duration Generator Destination Back

Generator Mode:

Duration Mode: Value: Seconds

Stimuli

Port A

Generator 1 Off On 08:38:26 ■■■

Generator Destination Payload Back

Stream Line Load %

Frame Size [Bytes] Profile:

Start: Step: End: Duration: s

Total line load : 0.0000% with 0 of 8 streams active

Stimuli

Port A

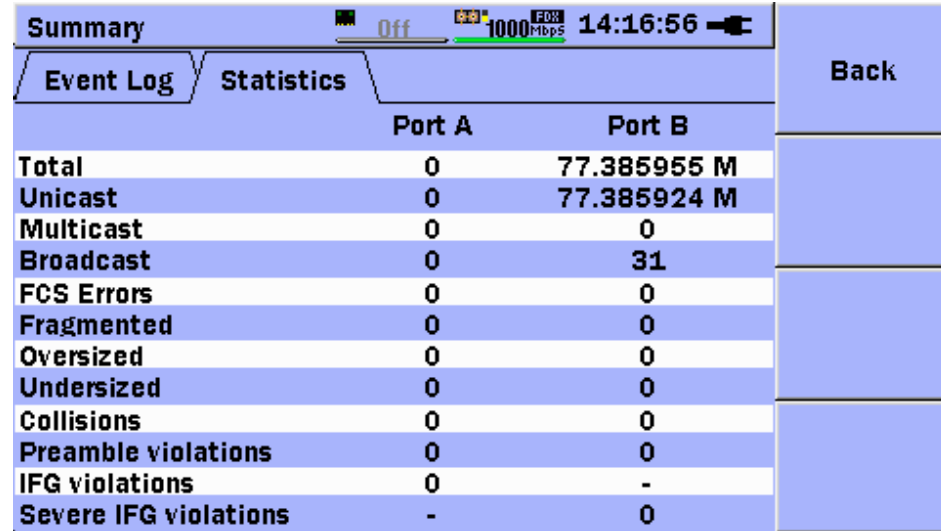
Stream 1

Network Master Gigabit Ethernet Tester

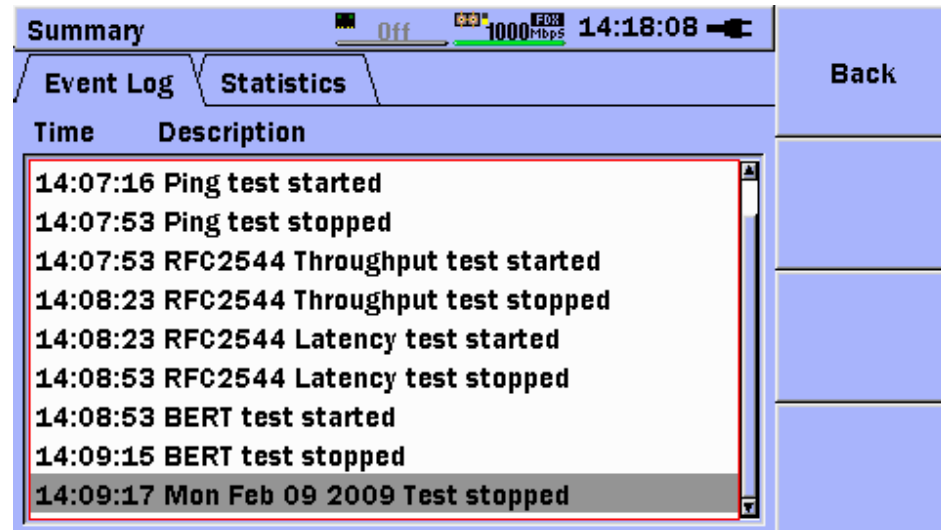
Ethernet Summary.

- **Statistics:**
 - ◆ Total frames
 - ◆ Unicast, Multicast Broadcast breakdown
 - ◆ Frames with various errors

- **Event log**
 - ◆ Information on major events during the execution of a test sequence



	Port A	Port B
Total	0	77.385955 M
Unicast	0	77.385924 M
Multicast	0	0
Broadcast	0	31
FCS Errors	0	0
Fragmented	0	0
Oversized	0	0
Undersized	0	0
Collisions	0	0
Preamble violations	0	0
IFG violations	0	-
Severe IFG violations	-	0



Time	Description
14:07:16	Ping test started
14:07:53	Ping test stopped
14:07:53	RFC2544 Throughput test started
14:08:23	RFC2544 Throughput test stopped
14:08:23	RFC2544 Latency test started
14:08:53	RFC2544 Latency test stopped
14:08:53	BERT test started
14:09:15	BERT test stopped
14:09:17	Mon Feb 09 2009 Test stopped

Why Ethernet Multistream testing?

- **By sending several streams of traffic with different priority settings the user can verify that high priority traffic is transported better (i.e. has lower frame loss ratio) through a congested network than low priority traffic.**
- **VoIP traffic is often given a high priority in order to ensure the quality of the service**
 - ◆ **In some cases VLAN tag priority is used to give high priority**
 - ◆ **In other cases the DSCP/TOS byte is used to give high priority**
 - ◆ **In other cases high priority is given to selected TCP/UDP port numbers**

Network Master Gigabit Ethernet Tester

Multistream option.

- With Multistream option the instrument can generate up to 8 streams on the Ethernet link
 - ◆ Individual settings of traffic load and header information for the streams, including VLAN priority, DSCP/TOS byte and TCP/UDP port numbers for each stream.

The image displays two screenshots of the Network Master Gigabit Ethernet Tester interface. The top screenshot shows the 'Generator 1' configuration screen. The 'Generator' tab is selected, and the 'Stream Line Load' is set to 50.0000%. The 'Frame Size [Bytes]' section is configured with a 'Constant' profile, a 'Start' of 100, an 'End' of 500, a 'Step' of 50, and a 'Duration' of 1 second. The 'Total line load' is shown as 100.0000% with 2 of 8 streams active. The bottom screenshot shows the 'Interface' configuration screen. The 'Advanced' tab is selected, and the 'TCP' protocol is chosen. The 'Source Port', 'Destination Port', 'Sequence number', 'Ack. number', 'Reserved', and 'Flags' are all set to 0. The interface also shows 'Follow Port A' is unchecked and 'Port B' is selected.

Network Master Gigabit Ethernet Tester

Multistream option.

- With Multistream option the instrument shows frame loss for the defined up to 8 streams making it easy to see if high priority traffic has lower frame loss than low priority traffic

Generator results		Off	1000Mbps	14:12:05
Tx results				
Tx Total Frames	10.412095 M			
Tx Total Bytes	1.041209 G			
Tx Broadcast Frames	0			
Tx Broadcast Bytes	0			
Rx results				
Rx Total Frames	10.412095 M			
Rx Total Bytes	1.041209 G			
Rx Errored Frames	0			
Frame loss				
Frames lost	0			
Frame loss(%)	0			

Back

Stimuli

Port B

Stream 1

Generator results		Off	1000Mbps	14:12:22
Tx results				
Tx Total Frames	10.412095 M			
Tx Total Bytes	1.041209 G			
Tx Broadcast Frames	0			
Tx Broadcast Bytes	0			
Rx results				
Rx Total Frames	10.412095 M			
Rx Total Bytes	1.041209 G			
Rx Errored Frames	0			
Frame loss				
Frames lost	0			
Frame loss(%)	0			

Back


Stimuli

Port B

Stream 2

Report generation (PDF and CSV)

- **PDF: De facto standard document format**
- **Customer logo can be inserted**
- **Comments on the test can be added**
- **CSV: Easily editable format**

: 2009-02-09 15:06:55

Document Information

Comment

Customer: customer

Project/Description: test

Operator:

Notes:

Network Master Gigabit Ethernet Tester

Internal Storage.

- Save and Load Setups
- Load Results
 - ◆ Results are automatically saved when a test stops

- Print screen

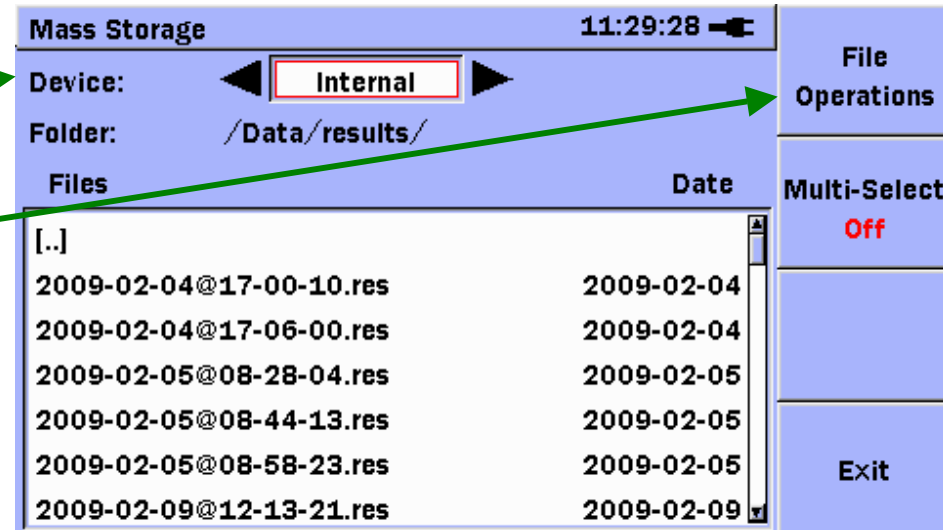
- Mass Storage Functions

- ◆ Select location

- Internal or USB

- ◆ File operations

- Copy
 - Delete
 - Rename
 - Create folders



- Integrated soft keyboard for entering of text/names
- Storage of PDF reports

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