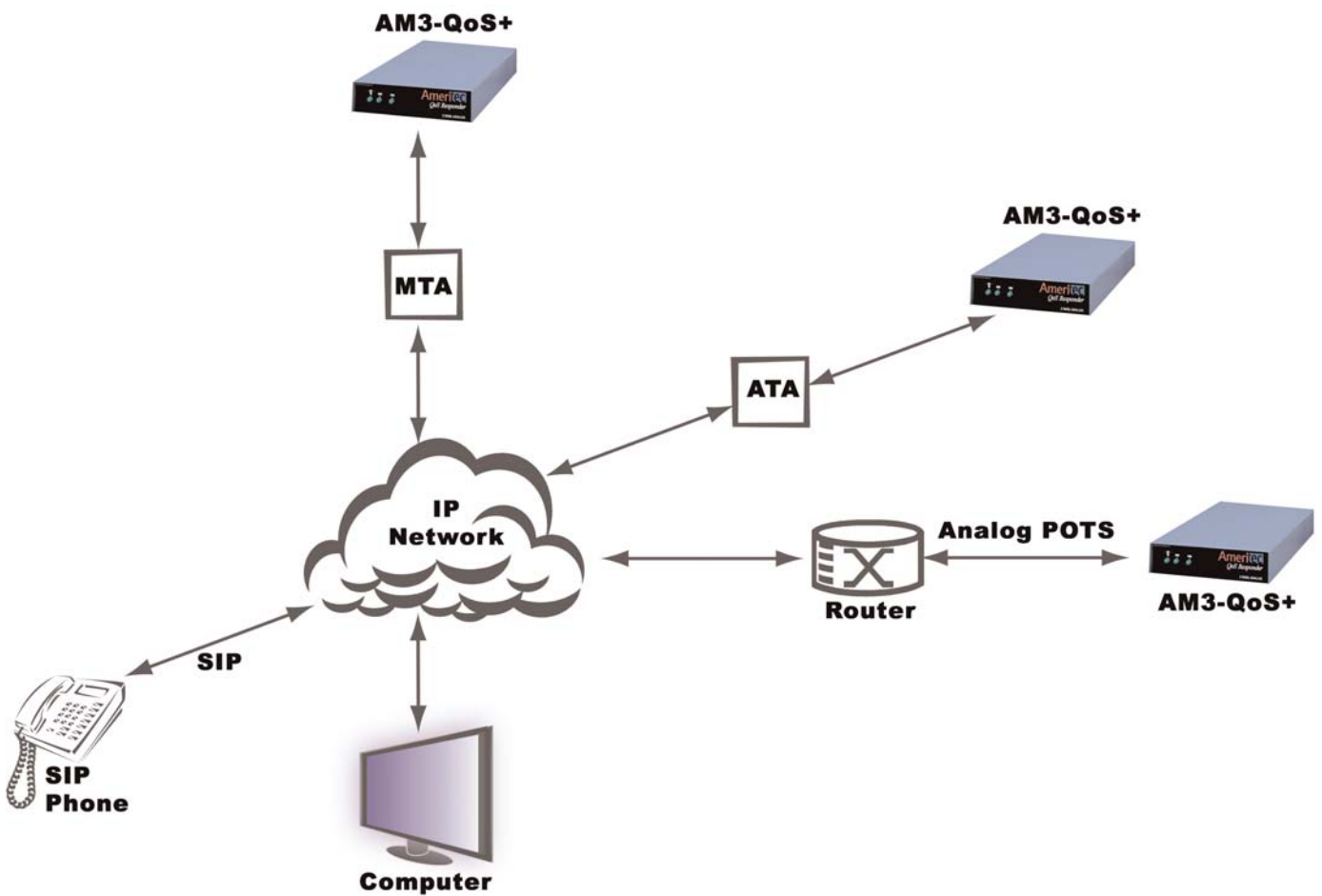


- ▶ GoldenWatch is a comprehensive network monitoring system designed to provide detailed QoS and call completion statistics for PSTN and IP networks.
- ▶ GoldenWatch is designed to work “right out of the box” and requires minimal configuration.
- ▶ GoldenWatch can be used in any network that provides access to a 2-wire analog line (POTS).

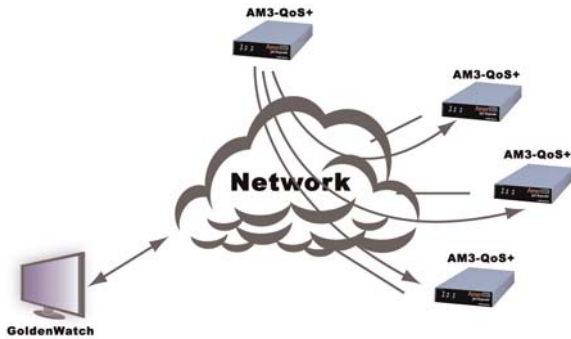
The GoldenWatch network monitoring system represents a significant advancement in network monitoring and the tracking of QoS performance as well as call completion analysis. GoldenWatch is designed to operate at a central location where it communicates and gathers data at pre-determined intervals from remote AM3-QoS+ responder units. These AM3-QoS+ responder units are configured to place calls to other AM3-QoS+ units within the network and record data that is then uploaded back to the central site. QoS scores and call completion data are then calculated, and displayed.

The AM3-QoS+ comes with the ability to support Ameritech’s industry leading QoS and Call Completion measurement package:

- ▶ 2-Wire Analog (POTS) interface



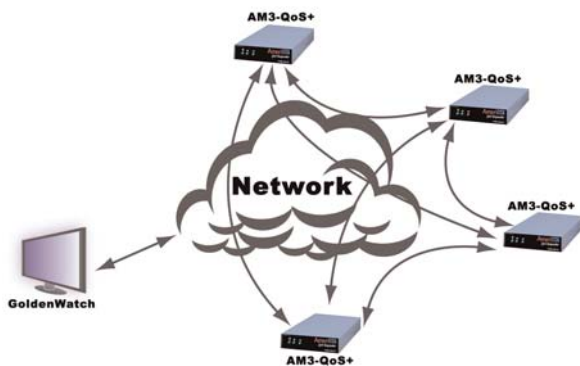
Call Completion Testing



Applications

- ▶ Quality of Service Testing
- ▶ Call Completion Analysis
- ▶ PSTN - IP Testing
- ▶ Network Fault Isolation
- ▶ Simulating Real-User Experience

Quality of Service (QoS) Testing



Operation

The GoldenWatch product allows the service provider to measure and define metrics of service based on a number of parameters including time of day performance, call quality, call completions, etc. At the central site resides a computer that runs the GoldenWatch program and provides a convenient, easy to use configuration tool that downloads calling parameters into each of the remote AM3-QoS+ responder units. Upon completion of these downloads, each responder is then able to execute calling routines that will call other responder units, measure network data such as lost packets, delay, etc. and later upload this information back to the central site for detailed QoS scoring and reporting. The number of AM3-QoS+ units calling as well as their associated calling intervals can be defined by the user so that comprehensive data can be accumulated to determine QoS and call completion statistics throughout the network.

Measurements

Long known for providing the most comprehensive set of measurements in the industry, Ameritech has incorporated into every AM3-QoS+ the ability to measure calls originated and completed as well as a detailed set of QoS measurements designed to provide packet quality and voice quality scoring. Measurements include level, noise, SNR, packet loss, signal to noise ratio, and delay while simultaneously providing, GMOS, G-PSQM and G-PESQ scoring. Alarms are reported by the responder once a QoS threshold value is exceeded or a specified number of incomplete calls has been reached.

Reporting

GoldenWatch is designed to provide easy to use, yet detailed, valuable reports to the user. There are 2 primary reports that are created to provide the user with either QoS scoring reports in one and call completion reports in the other. Alarms are reported by the responder once a QoS threshold value is exceeded or a specified number of incomplete calls has been reached.

Configuration

Each AM3-QoS+ responder requires the user to download both its calling data used to call other AM3-QoS+ units in the network as well as directory numbers so that it can communicate with the central test site. The responder data includes whether the AM3-QoS+ is a terminating unit or an originating/terminating unit, type of code supported and the type of dial set the responder belongs to. Once these dial sets are created the user then has the ability to implement a testing plan that will instruct the responder units to place/receive calls at specified timing intervals with other responder units in the network. Data is accumulated and then uploaded to the central site and reported.

Performance

GoldenWatch provides the service provider with flexibility as well as performance. The user can configure the remote responder units to call each other in an effort to gather as much QoS data as possible over the maximum number of responder endpoints.

Alternatively, it is possible to configure only a single responder to call multiple units so that call completion analysis data could be gathered. Further programming would allow a mix of these activities to take place.

GoldenWatch - goldenwatch.sys

File Edit View Configuration Dial Set Actions Help

Modem: Ready | Next Report: 10/28 17:00 | Responder: Conference Room | Status: Uploading | Progress: 100%

Responder	State	Status	Last Update	Last Alarm	Comp Rate	Orig GMOS	Dial Set	Orig #/tryp	Num QoS Vln
JZ Office	Yellow	Mismatched Config	10/27/06 17:00		100.00	4.44	Group A	233114	0
JY Desk	Red	Invalid Config	10/27/06 17:05		100.00	4.34	Group A	233114	0
VH Desk	Red	QoS Alarm	10/27/06 17:10	10/27/06 16:05	100.00	4.65	Group A	233114	5
GK Desk	Red	QoS Alarm	10/27/06 17:15	10/20/06 11:27	100.00	3.77	Group A	233114	234
DP Desk	Red	Call Control Alarm	10/27/06 17:20	10/27/06 03:08	99.86	4.48	Group B	15523	1
YA Desk	Green	OK	10/27/06 17:25		100.00	4.53	Group B	15523	0
DC Desk	Green	OK	10/27/06 17:30		100.00	4.45	Group B	15523	0
AO Desk	Green	OK	10/27/06 17:35		100.00	4.32	Group B	15523	1
YS Desk	Green	OK	10/27/06 17:40		100.00	4.37	Group B	15523	1
BS Desk	Green	OK	10/27/06 17:45		100.00	4.31	Group B	15523	0
DL Desk	Green	OK	10/27/06 17:50		100.00	4.40	Group B	15523	0
DM Desk	Green	Pending Upload	10/27/06 17:55		100.00	4.55	Group C	0	0
Conference Room	Green	Uploading	10/27/06 18:00		100.00	4.44	Group C	0	0

MODEM READY

Advanced Default Dial Set Configuration

Dial Set: []

Default Line Parameters:

Dial Delay: 0 | No Answer Threshold: 10

Default Responder Parameters:

Inter Cycle Delay: 180 | Inter Call Delay: 180

Call Home on Power up: | Max Retries: 255 | Retry Delay (min): 10

Call Home other than Power up: | Max Retries: 3 | Retry Delay (min): 3

Default QoS Alarm Settings:

Alarm after: 2 threshold violations | Threshold value: 3.80 | Scoring Method: GMOS

Default Incomplete Alarm Settings:

Alarm after: 9 incomplete calls

Advanced QoS Parameters:

Send Loudness Rating (0-18dB): 8 | Receive Loudness Rating (0-18dB): 2

Wire delay, Send side (0-10ms): 0 | Wire delay, Receive side (0-10ms): 0

Terminal Balance Return Loss, Send (0-50dB): 32 | Terminal Balance Return Loss, Rec. (0-50dB): 32

Wideband Tone Masking Rating (10-20): 15 | Quantization Distortion Units (1-14): 1

Advantage Factor (0-20): 0 | Weighted Echo Path Loss (5-110): 110

Use Defaults

Save as Default | Save | Cancel | Help

Dial Set Configuration

Dial Set Name: Group A | Dial Plan Type: Mesh | Use default Dial Set

Add/Remove Responders:

Sample Listbox: [] | Add >> | << Remove | Remove All | Move

Alarms:

QoS Alarm On | Incomplete Alarm On

Test Window:

Window Open (hh:mm): 08:00 | Window Close (hh:mm): 17:59

Generate Dial Plan:

Auto | Manual

Save | Cancel | Help

Configuration

Setup:

Order Name: JZ Office | Dial Set: Group A | Terminating Only | Originating & Terminating

Location (optional): Americc, Covina Office, CA, USA

Incoming Calls:

Country Code: 1 | Area Code: 626 | Local Number: 9155441 | Extension Number: 630

Outgoing Calls:

International Prefix: 011 | National Prefix: 1 | Outside Line Prefix: 9w

Codec: G711 (Random) | Answer Delay (sec): 0

Save | Cancel | Help

Dial Set View/Edit - Group A

Dial Set Name: [Group A] | Dial Set Window Open (hh:mm): 17:00 | Dial Set Window Close (hh:mm): 08:00

Responder	Window Open	Window Close	Dial Plan
JZ Office	17:00	20:45	3
JY Desk	20:45	00:28	3
VH Desk	00:30	04:13	3
GK Desk	04:15	07:58	3

Available Responders:

JY Desk: 9P16269155441PP123 | Add >> | << Remove | Remove All | Move

VH Desk: 9P0114402345553342445

GK Desk: 345

VH Desk: 9P0114402345553342445

Current Dial Plan:

JY Desk: 9P16269155441PP123

VH Desk: 9P0114402345553342445

GK Desk: 345

VH Desk: 9P0114402345553342445

SAVE | CANCEL | HELP

GoldenWatch System Setup

Modem Setup:

Auto Configure | Modem ID: []

COM Port: COM7 | AT Command: AT+MS=V23C,0,1200,1200 | Test Modem

GoldenWatch Configuration:

GoldenWatch Phone Information:

Incoming Calls: Country Code: 1 | Area Code: 626 | Local Number: 9155441 | Extension Number: 345

Outgoing Calls: International Prefix: 011 | National Prefix: 1 | Outside Line Prefix: 9w

GoldenWatch Report Schedule:

Report Time (hh:mm): 09:00 | And thereafter (hh:mm): 24:00 | Max Retries: 3 | Retry Delay (min): 3

Save | Cancel | Help

General characteristics

User interface	Windows XP based GUI
Dimensions (w × h × d)	129.54 × 35.56 × 226.06 mm 5.1" × 1.4" × 8.9"
Power	9 VDC, 300mA (wall transformer supplied with unit)
Weight	675 g / 1.5 pounds

Call programs and scripts

Features	- Quality of service scripts supplied with unit
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System

Capacity	1 analog 2-wire line
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Line types	- Loop start 2 wire
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Test interface	RJ11 (analog)
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Front panel	- Line status display: Green: line off-hook (analog) Green: Ring Detected - Unit active display: Dark: unit off Green: power on
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Voice channel functions

Detectors	Tone detectors are based on digital signal processors (DSPs) 1 per channel
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Call progress detectors	- One detector per line - Detects: dial tone, busy, reorder, ringback,
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Path confirmation receiver	- One receiver per line - Frequency range: 10 to 2500 Hz - Accuracy: 1%, ± 10 Hz - Sensitivity: 0 dBm to -44 dBm
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Voice over Packet

Voice path confirmation	GoldenVoice™ signal designed to pass through vocoder
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Packet drop out count	Count lost packets
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Measure delays through systems	- Round trip delay ± 10 ms resolution
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Signal-to-noise ratio	Average and maximum SNR received (from 0 to 39 dB)
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Signal energy	Average and maximum GoldenVoice energy received (from 0 to -50 dBm)
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Spurious energy	Maximum non-GoldenVoice energy received (from 0 to -50 dBm)
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Total energy	Average and maximum GoldenVoice energy plus extraneous noise received (from 0 to -50 dBm)
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GoldenVoice™	- Noise received (from 0 to -50 dBm) - Ten programmed Golden Voice tone signals, used to send the ID from each side encoded as three tone sequences
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QoS	Calculation of GMOS, GPSQM and GPESQ is based upon E-Model in ITU-T G.107.
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Report Generation

Statistics for each AM3-QoS+

- Drop Test Failed
- Drop Test Signal was Lost
- Min Round Trip Delay (ms)
- Avg Round Trip Delay (ms)
- Max Round Trip Delay (ms)
- Min Dropped Packets
- Avg Dropped Packets
- Max Dropped Packets
- Dropout Test Time (100ms)
- Dropout Packet Size (ms)
- Min Circuit Noise Level (-)
- Avg Circuit Noise Level (-)
- Max Circuit Noise Level (-)
- Min Total Receive Level (-)
- Avg Total Receive Level (-)
- Max Total Receive Level (-)
- Min Signal to Noise Ratio
- Avg Signal to Noise Ratio
- Max Signal to Noise Ratio
- Min GMOS Score
- Avg GMOS Score
- Max GMOS Score
- Min G-PESQ Score
- Avg G-PESQ Score
- Max G-PESQ Score
- Min G-PSQM Score
- Avg G-PSQM Score
- Max G-PSQM Score
- Number of QoS Violations
- Avg Call Duration (s)
- Originate Attempt
- Originate Complete
- No Dialtone Detected
- Reorder Detected
- Line Busy Detected
- Min Dialtone Delay (s)
- Avg Dialtone Delay (s)
- Max Dialtone Delay (s)
- ID Test Failed
- Round Trip Delay Failed
- Time of Last Call
- Dialtone Delay (s)
- Round Trip Delay (ms)
- Dropped Packets
- Circuit Noise Level (-)
- Total Receive Level (-)
- Signal to Noise Ratio
- GMOS Score
- G-PESQ Score
- G-PSQM Score
- Completion Rate
- Call Setup Failures
- Speech Path Failures
- Call Failures

Ordering information
Mainframe/Chassis/Test Set

AM3-QoS+ 250559	2 Wire Analog Test Unit GoldenWatch GUI
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Please ask for further information on:

- ▶ VoIP test applications including GMOS, PESQ, etc.

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