

# AQuA Powered Asterisk Voice Quality Monitoring Solution

More info at:

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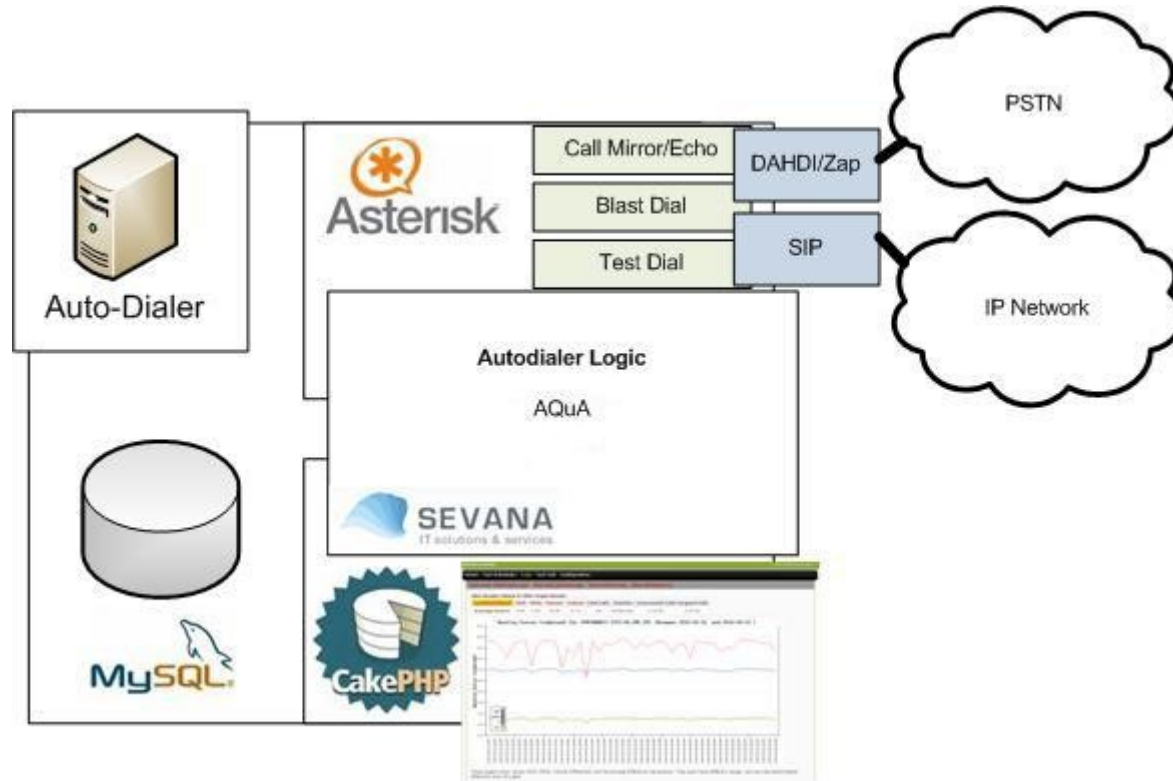


# Overview

- Asterisk-powered dialer software
- Web Interface
- UNIX/Linux Cron-based Schedule Logic
- Open-Source Code
- Graphing Monitoring Stats
- MySQL Database for Call Records



# Solution Architecture



# Current Features

- **Dial by SIP or PSTN** - Asterisk base capable of dialing via any medium
- **Blast-Dialing** - send multiple calls to 1 trunk for specified duration
  - No QoS/MOS scoring performed, designed for load testing
- **QoS/MOS Test-Dialing**
  - Ad-Hoc - perform on-demand test dials
  - Scheduled - unlimited schedules - hardware/software limited
  - Multiple "Test Applications" Possible: Current system designed to access conference bridge
    - Simple Customized sequencing could allow testing through IVR menus, or other applications as required.

# Current Features

- **QoS/MOS Test-Dialing**
  - Dial MIRROR/Echo: Each dialer configured to respond to calls from another dialer by CallerID
    - Pre-Deployment Option: Perform simple inter-dialer testing
- **Reporting**
  - Reports performance of scheduled tests over time
  - Detailed graphs over time
    - MOS, PESQ, R-Value, Volume/Amplitude Difference
  - Sortable tables of results for all calls
  - Detailed View of each test call
    - Embedded web player; compare source, reference WAVs
- **Initiate Dials via Web Service**
  - All calls are initiated by HTTP POST (even internally)



# Upcoming Features

- Roll-up Reporting Dashboard
- Scheduled email reports
- Email notifications
  - Threshold definitions per schedule, email notifications





# Scheduler

[New Test Schedule](#)

## Test Schedules

**\*NOTE:** This table defines the schedule of test calls that this dialer will attempt. A local script will check this table every FIVE MINUTES, and attempt any calls that match the run criteria.

- **HOUR:** Listed hour (*per 24h clock*) will only run on the listed hour. (e.g. enter "22" to run at 10pm)
- **MINUTE:** Listed minute will run per this FREQUENCY. If blank, it will run once on the hour. If you leave HOUR blank, it will run constantly per this interval. (to the nearest 5-minute increment)

This dialer will place a call using the listed parameters, record the call, and log all calls to [The Call Log](#).

Page 1 of 1, showing 9 records out of 9 total, starting on record 1, ending on 9

O/i	Test Name	Gateway	Destination Name	Grp1	Grp2	Schedule (Hr/i)	Schedule (Min/i)	Scores	Actions
	FRCOUBRI1-ITFS	<a href="#">USNYCIMG1</a>	<a href="#">FRCOUBRI1</a>	<a href="#">FR</a>	<a href="#">US FRE FR</a>	all/x	5,35/x	-	
	FRCOUBRI1-SIP-Direct	<a href="#">FRCOUBRI1</a>	<a href="#">FRCOUBRI1</a>	<a href="#">FR</a>	<a href="#">SIP MPLS</a>	all/x	10,20,30,40,50/x	-	
	FRSTDBRI3-ITFS	<a href="#">USNYCIMG1</a>	<a href="#">FRSTDBRI3</a>	<a href="#">FR</a>	<a href="#">US FRE FR</a>	all/x	X/30	-	
	FRSTDBRI3-TF-UK	<a href="#">USNYCIMG1</a>	<a href="#">FRSTDBRI3</a>	<a href="#">UK</a>	<a href="#">UK FRE FR</a>	all/x	5,35/x	-	
	USHUDBRI1-PSTN	<a href="#">USNYCIMG1</a>	<a href="#">USHUDBRI1</a>	<a href="#">US</a>	<a href="#">US FRE US</a>	all/x	X/30	-	
	USHUDBRI2-PSTN	<a href="#">USNYCIMG1</a>	<a href="#">USHUDBRI2</a>	<a href="#">US</a>	<a href="#">US FRE US</a>	all/x	5,35/x	-	
	USHUDBRI2-SIP-Direct	<a href="#">USHUDBRI2</a>	<a href="#">USHUDBRI2</a>	<a href="#">US</a>	<a href="#">SIP LAN</a>	all/x	0,30/x	-	
	USNYCBRI1-PSTN	<a href="#">USNYCIMG1</a>	<a href="#">USNYCBRI1</a>	<a href="#">US</a>	<a href="#">US FRE US</a>	all/x	X/30	-	
	USNYCBRI2-PSTN	<a href="#">USNYCIMG1</a>	<a href="#">USNYCBRI2</a>	<a href="#">US</a>	<a href="#">US FRE US</a>	all/x	X/30	-	

<< previous | next >>

**Actions:**

- o [New Test Schedule](#)
- o [View Call Logs](#)
- o [Return Home](#)

# Call Details

- ID
- Test Class
- Trunk
- Destination
- Destination Name
- Disposition
- Graphical wave form
- Call duration
- Ringtime
- MOS
- Date/Time of call placement

AutoMOS Dialer - Calldetails - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://vmdev/calldetails

AutoMOS Dialer ...No Updates...

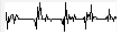
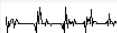

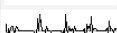

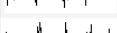

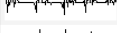
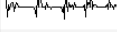
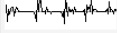
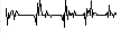



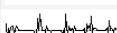



Home Test Schedules Logs Test Call Configuration

[View Auto-Dialer Raw Logs](#) [View QOS Scoring Logs](#) [View Switch Logs](#) [Clear All Scores \(!\)](#)

### Call Details

*This only stores records for "Test Calls". Blast dial calls are NOT logged or recorded. Click the links to filter the list by that element.*

Page 1 of 316, showing 20 records out of 6304 total, starting on record 1, ending on 20

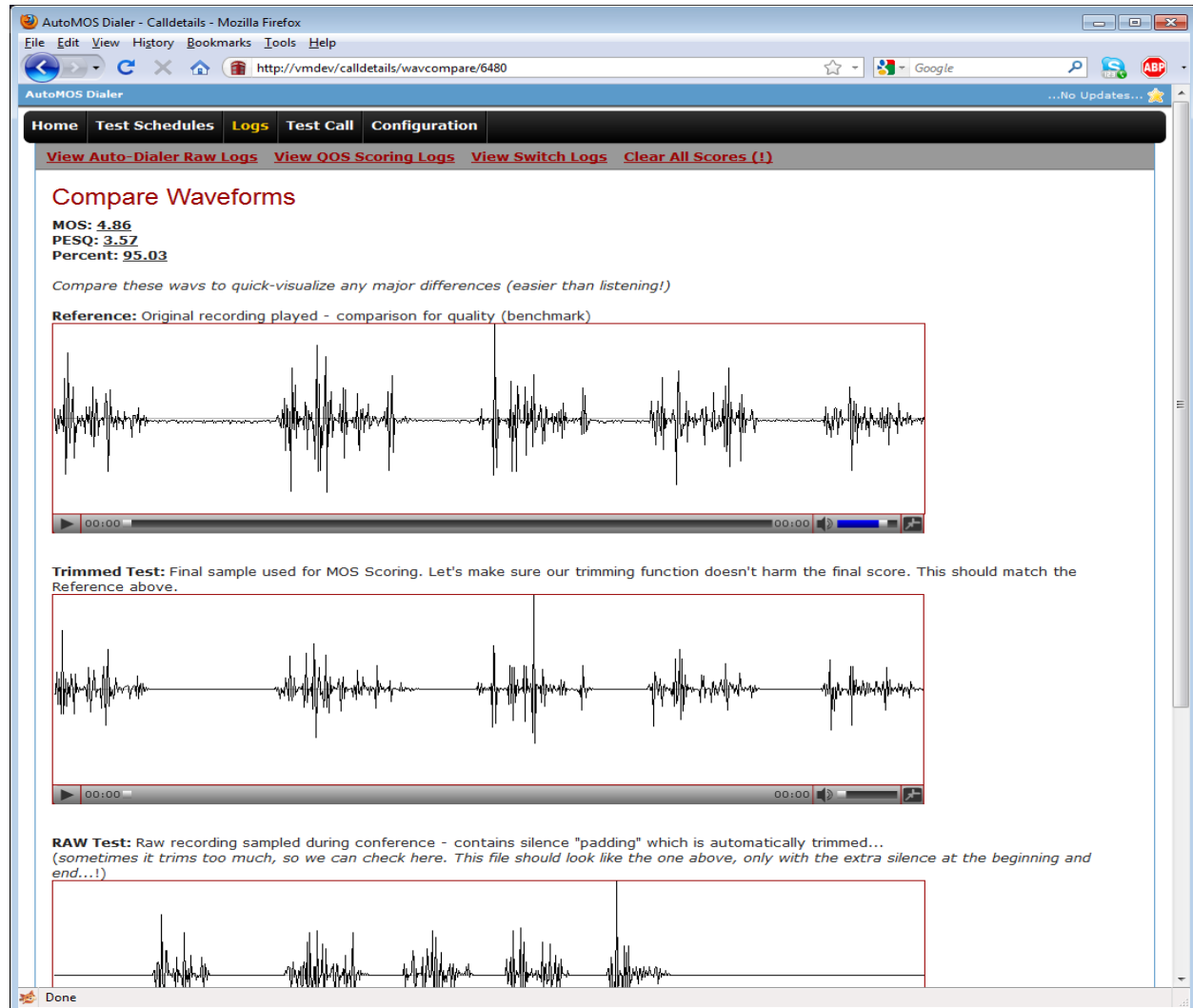
<u><a href="#">Id</a></u>	<u><a href="#">Testclass</a></u>	<u><a href="#">Trunk</a></u>	<u><a href="#">Destination</a></u>	<u><a href="#">Destination Name</a></u>	<u><a href="#">Disposition</a></u>	<u><a href="#">WAVCompare</a></u>	<u><a href="#">Calduration</a></u>	<u><a href="#">Ringtime</a></u>	<u><a href="#">Q Mos</a></u>	<u><a href="#">Placed</a></u>
6480	<a href="#">FRCOUBRI1-SIP-Direct</a>	<a href="#">FRCOUBRI1</a>	<a href="#">72309697</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		55	3	4.86	2010-04-27 16:20:01
6479	<a href="#">FRCOUBRI1-SIP-Direct</a>	<a href="#">FRCOUBRI1</a>	<a href="#">72309697</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		55	3	4.87	2010-04-27 16:10:02
6478	<a href="#">FRCOUBRI1-ITFS</a>	<a href="#">USNYCIMG1</a>	<a href="#">18669461675</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		55	7	4.22	2010-04-27 16:05:01
6477	<a href="#">USHUDBRI2-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18662520050</a>	<a href="#">USHUDBRI2</a>	<a href="#">answered</a>		51	9	4.24	2010-04-27 16:05:01
6476	<a href="#">USNYCBRI2-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18664394480</a>	<a href="#">USNYCBRI2</a>	<a href="#">answered</a>		50	9	4.14	2010-04-27 16:00:02
6475	<a href="#">USHUDBRI2-SIP-Direct</a>	<a href="#">USHUDBRI2</a>	<a href="#">8662520050</a>	<a href="#">USHUDBRI2</a>	<a href="#">answered</a>		44	3	4.89	2010-04-27 16:00:02
6474	<a href="#">USHUDBRI1-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18669460485</a>	<a href="#">USHUDBRI1</a>	<a href="#">answered</a>		53	10	4.18	2010-04-27 16:00:02
6473	<a href="#">FRSTDBRI3-ITFS</a>	<a href="#">USNYCIMG1</a>	<a href="#">18667942598</a>	<a href="#">FRSTDBRI3</a>	<a href="#">answered</a>		51	7	4.31	2010-04-27 16:00:02
6472	<a href="#">USNYCBRI1-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18662060240</a>	<a href="#">USNYCBRI1</a>	<a href="#">answered</a>		54	7	4.34	2010-04-27 16:00:02
6471	<a href="#">FRCOUBRI1-SIP-Direct</a>	<a href="#">FRCOUBRI1</a>	<a href="#">72309697</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		55	3	4.86	2010-04-27 15:50:01
6470	<a href="#">FRCOUBRI1-SIP-Direct</a>	<a href="#">FRCOUBRI1</a>	<a href="#">72309697</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		55	4	4.86	2010-04-27 15:40:01
6469	<a href="#">USHUDBRI2-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18662520050</a>	<a href="#">USHUDBRI2</a>	<a href="#">answered</a>		52	8	4.28	2010-04-27 15:35:01
6468	<a href="#">FRCOUBRI1-ITFS</a>	<a href="#">USNYCIMG1</a>	<a href="#">18669461675</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		54	7	4.28	2010-04-27 15:35:01
6467	<a href="#">USHUDBRI1-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18669460485</a>	<a href="#">USHUDBRI1</a>	<a href="#">answered</a>		52	10	4.17	2010-04-27 15:30:02
6466	<a href="#">USHUDBRI2-SIP-Direct</a>	<a href="#">USHUDBRI2</a>	<a href="#">8662520050</a>	<a href="#">USHUDBRI2</a>	<a href="#">answered</a>		43	4	4.88	2010-04-27 15:30:02
6465	<a href="#">FRSTDBRI3-ITFS</a>	<a href="#">USNYCIMG1</a>	<a href="#">18667942598</a>	<a href="#">FRSTDBRI3</a>	<a href="#">answered</a>		51	8	4.34	2010-04-27 15:30:02
6464	<a href="#">USNYCBRI2-PSTN</a>	<a href="#">USNYCIMG1</a>	<a href="#">18664394480</a>	<a href="#">USNYCBRI2</a>	<a href="#">answered</a>		54	7	4.08	2010-04-27 15:30:02
6463	<a href="#">FRCOUBRI1-SIP-Direct</a>	<a href="#">FRCOUBRI1</a>	<a href="#">72309697</a>	<a href="#">FRCOUBRI1</a>	<a href="#">answered</a>		54	4	4.86	2010-04-27 15:30:02

Done



# Compare Waveforms

- Visualize major waveform differences
  - Reference
  - Trimmed Test
  - Raw Test
- Compare files by listening



The screenshot shows the AutoMOS Dialer web interface in a Mozilla Firefox browser. The page title is "AutoMOS Dialer - Calldetails - Mozilla Firefox". The address bar shows the URL "http://vmdev/calldetails/wavcompare/6480". The interface has a navigation menu with "Home", "Test Schedules", "Logs", "Test Call", and "Configuration". Below the menu, there are links for "View Auto-Dialer Raw Logs", "View QOS Scoring Logs", "View Switch Logs", and "Clear All Scores (!)".

The main content area is titled "Compare Waveforms" and displays the following metrics:

- MOS: 4.86
- PESQ: 3.57
- Percent: 95.03

Below the metrics, there is a note: "Compare these ways to quick-visualize any major differences (easier than listening!)".

The interface shows three waveform comparison sections:

- Reference:** Original recording played - comparison for quality (benchmark). This section shows a waveform with a play button and a progress bar at the bottom.
- Trimmed Test:** Final sample used for MOS Scoring. Let's make sure our trimming function doesn't harm the final score. This should match the Reference above. This section shows a waveform that is a trimmed version of the reference, with a play button and a progress bar.
- RAW Test:** Raw recording sampled during conference - contains silence "padding" which is automatically trimmed... (sometimes it trims too much, so we can check here. This file should look like the one above, only with the extra silence at the beginning and end...!). This section shows a waveform with significant silence at the beginning and end, with a play button and a progress bar.

The status bar at the bottom of the browser window shows "Done".

# Visualized reporting

- Visualize call quality scores
  - MOS-like scores
  - PESQ-like scores
  - Percentage
  - Volume
  - Combined report
- For each call listed in the table one can download comparison recordings, and view details of the errors causing the quality loss in the log for each comparison



# Scheduler Setup

- Edit Test Scheduler
  - Setup Test Data
  - Configure Test Schedule
  - Setup Timing

**Edit Testschedule**

Enabled

---

**Test Data**

Grp1

Schedule Name

PBX Trunk to Use

Destination Name

Number to Dial

Grp2

PIN

---

**Schedule**

*Choose either the Hour, Minute Interval or Both to schedule. System checks every 5 minutes, and runs if Hour Matches, and Minute Interval matches, or is exceeded. (5-minute minimum)*

Scheduled Minute(s) (Comma Separate Multiple)

or, Scheduled Minute Interval (Run every X minutes)

Scheduled Hour (Comma Separate Multiple)

or, Scheduled Hour Interval (Run every X hours)

---

**Timing (Optional)**

Absolute Call Timeout (Default: 90s)

Initial Pause After Answer (Default: 3s)

Pause After PIN Entry (Play) (Default: 11s)

Silence Added After Playback (Play) (Default: 11s)

Pause After PIN Entry (Rec) (Default: 9s)

Recording Sample Duration (Rec) (Default: 26s)

Submit

# Benefits

- Flexible Custom Development / Extension Options
- Offered as software or appliance
- Cost-effective
- Fast deployment
- Open source based



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