

Open Source Call Centres

Presented by

Matt Florell

President
eflo.net LLC

Reza M. Reza

President
Digital Canada Inc.

it360 Conference * Toronto
April 9, 2008

What makes a system Open Source?

- 68 OSI-approved “Open Source” licenses
 - Examples: GPL, BSD, Apache, MPL, etc...
 - Source code must be included with distributed application
 - No discrimination against any person or group, and the package must be language and technology neutral
 - License cannot be for one piece of software only
 - License must not restrict other bundled software

Taken from OSI (Open Source Initiative) - <http://www.opensource.org>

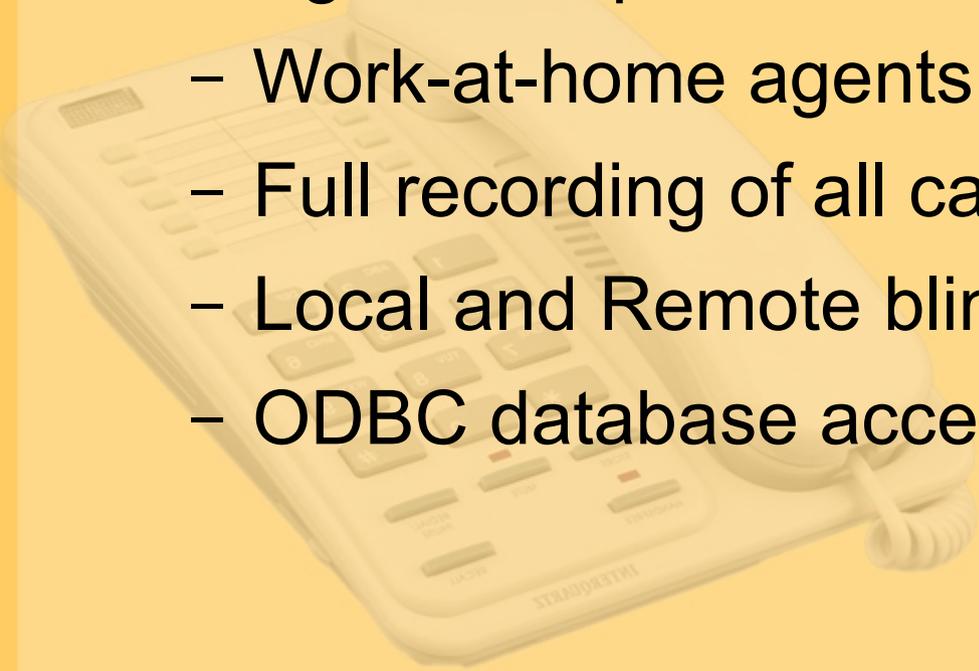
What Open Source Software Works in the Call Centre?

- Call Routing and PBX software
- Customer Relationship Management (CRM)
- VOIP Soft Phones
- Web Browsers
- Instant Messaging Applications
- Office and Productivity Applications
- Other Infrastructure services(email/web/etc...)



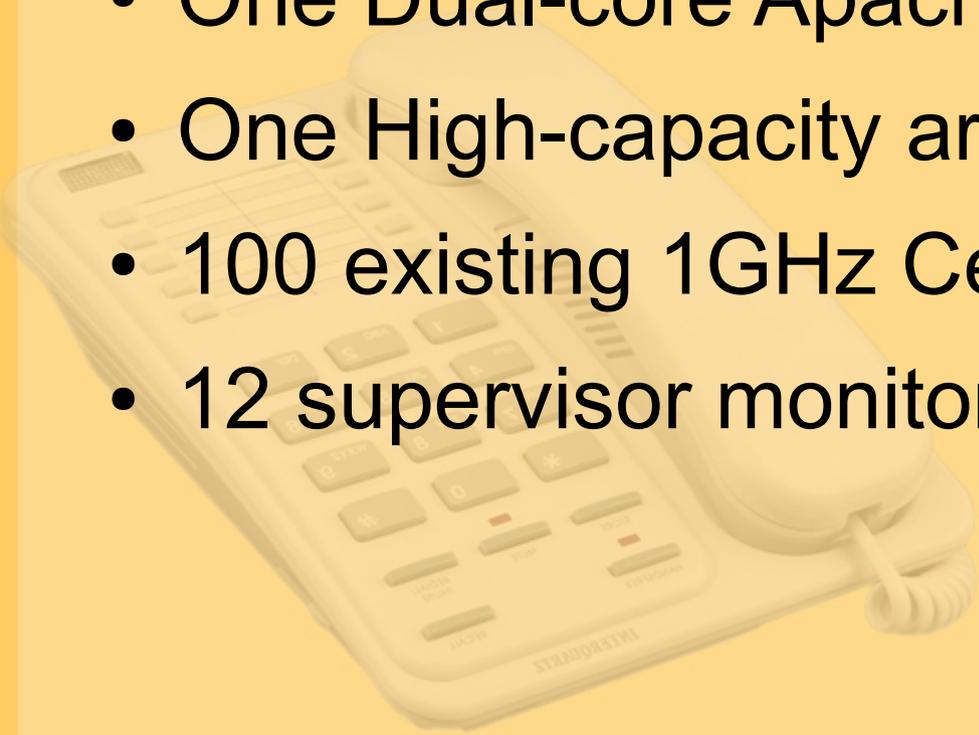
Case Study: 100 Seat Call Centre

- Call centre moving off of a proprietary system to a totally Open Source platform
- Requirements:
 - Inbound/Outbound/Blended call handling capability
 - Agent computers with CRM integration
 - Work-at-home agents capability
 - Full recording of all calls
 - Local and Remote blind monitoring of all agents
 - ODBC database access to raw call logs



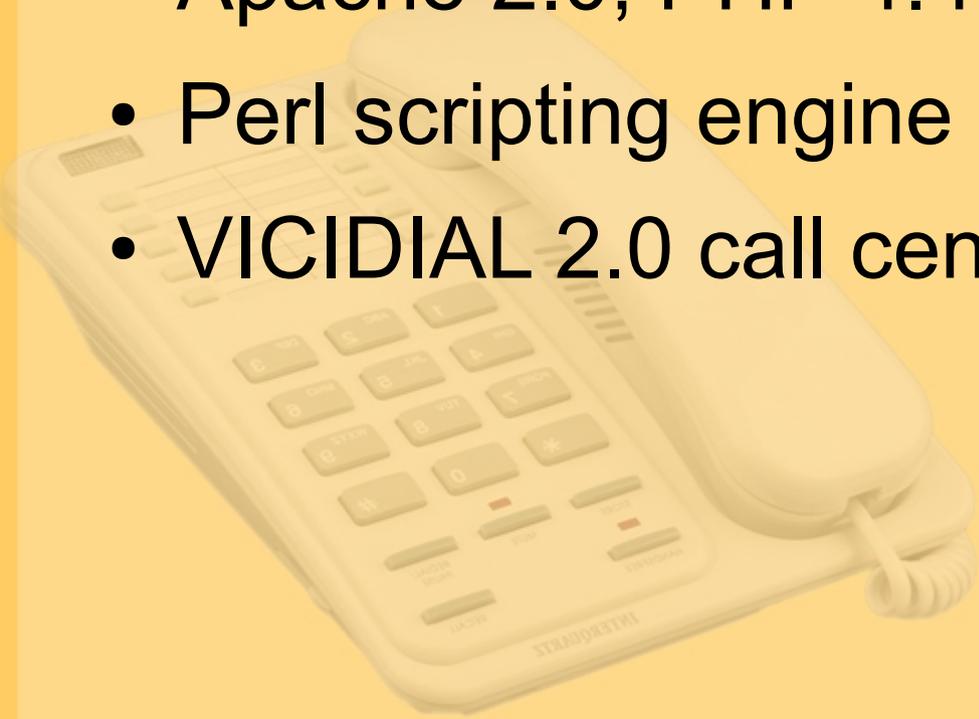
Case Study: Hardware

- 4 x Quad T1 cards needed for T1 connections
- 4 x Dual-core Xeon Asterisk servers
- One Dual-core Dual-CPU MySQL server
- One Dual-core Apache/PHP webserver
- One High-capacity archive server for recordings
- 100 existing 1GHz Celeron Agent computers
- 12 supervisor monitor phones and computers



Case Study: Server Software

- CentOS 4 Linux
- Asterisk 1.2 PBX
- MySQL 5.0 database
- Apache 2.0, PHP 4.4, eaccelerator webserver
- Perl scripting engine
- VICIDIAL 2.0 call centre suite



Case Study: Agent Software

- Ubuntu Desktop Linux
- Firefox web browser
- Pidgin Instant Messaging client



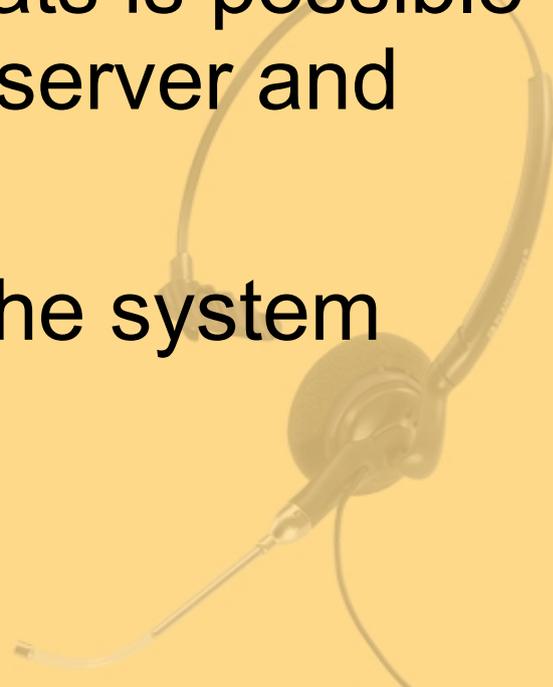
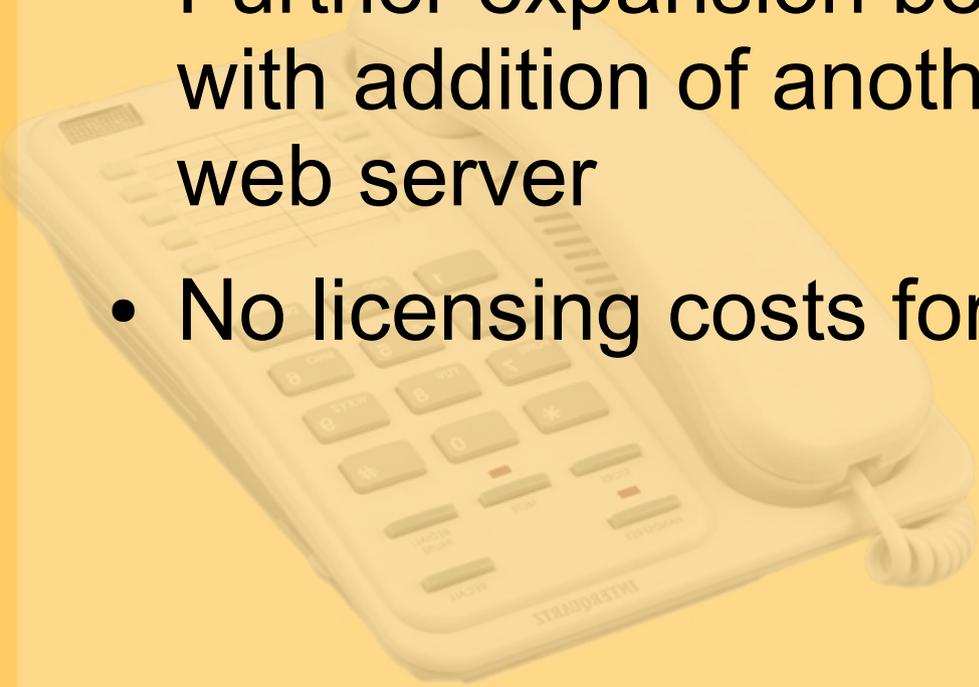
Case Study: Reliability - Performance

- Better than 99.999% system uptime during production hours since launch in September 2007*
- Operating efficiency grew overall since the switch to the new system
- Total agent wait-time dropped as compared to the old system

* uptime calculation does not include downtime that is scheduled in advance, carrier downtime or power outages

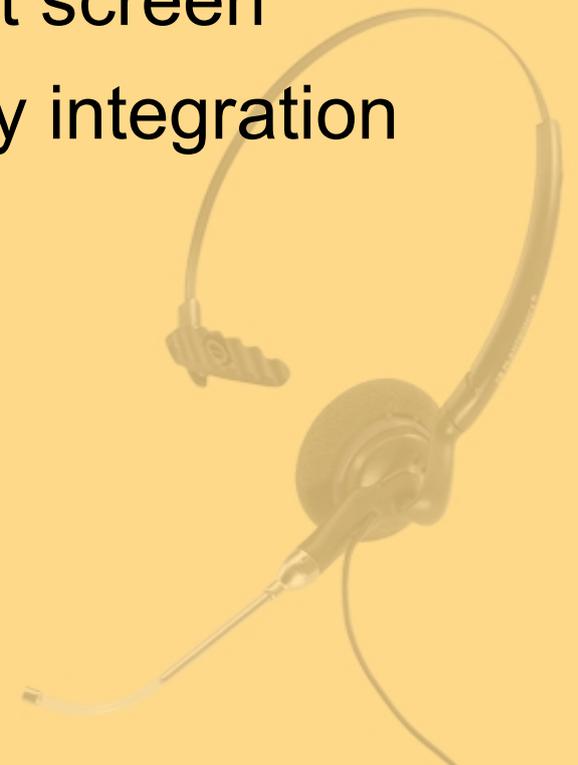
Case Study: Scalability

- Original System designed for 100 seats. Option of expanding to 200 seats possible by adding four more Asterisk servers and 100 more agent stations
- Further expansion beyond 200 seats is possible with addition of another database server and web server
- No licensing costs for expanding the system



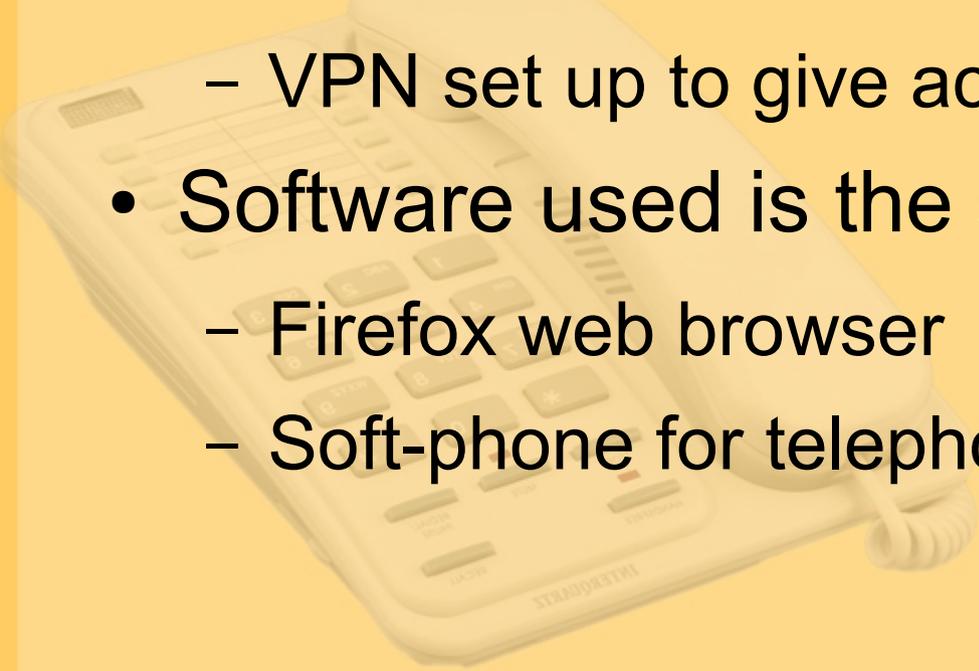
Case Study: User Interface

- Call centre agent screen:
 - Web-based VICIDIAL agent screen in Firefox using AJAX
 - Internal CRM application displays customer information inside of VICIDIAL agent screen
 - Agent IAX Soft-phones for telephony integration



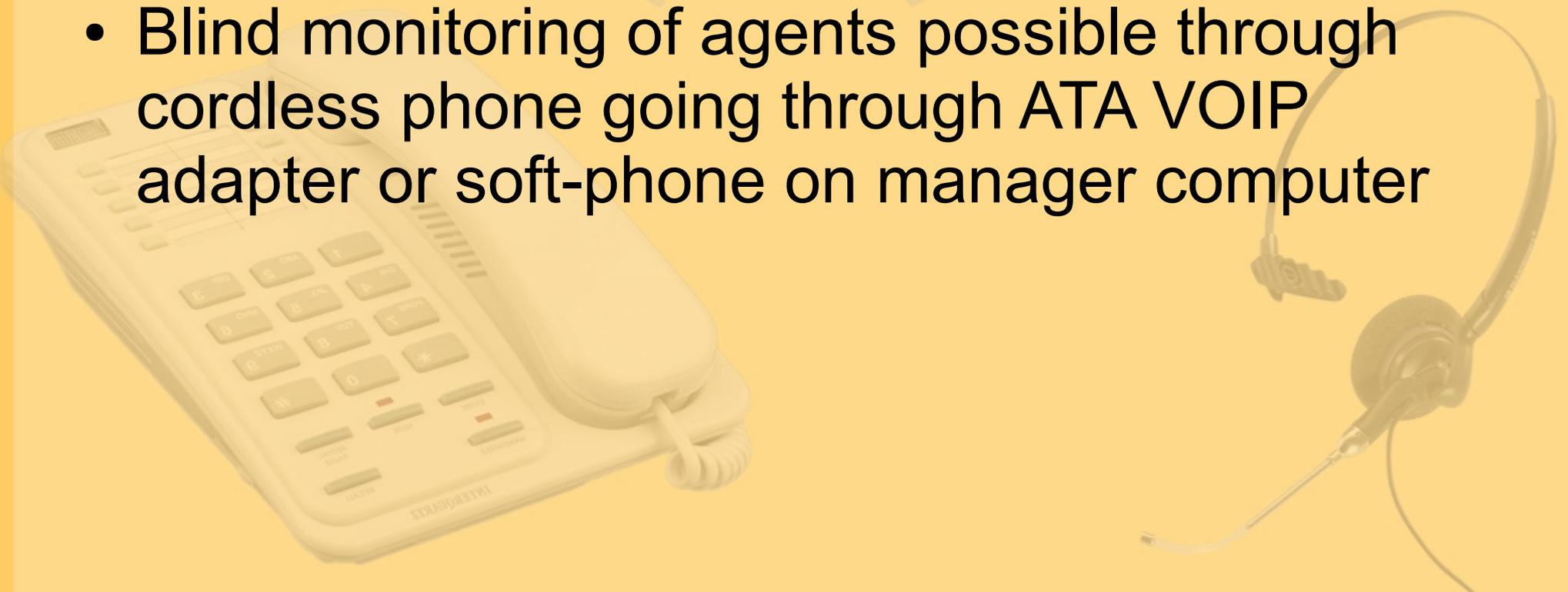
Case Study: Work-at-Home Agents

- Work-at-home Agent requirements:
 - Pentium III 700MHz or better
 - Windows(2000/XP)/Ubuntu Linux supported by company IT staff
 - DSL or Cable Internet connection
 - VPN set up to give access to internal network
- Software used is the same as in-house agents
 - Firefox web browser
 - Soft-phone for telephony



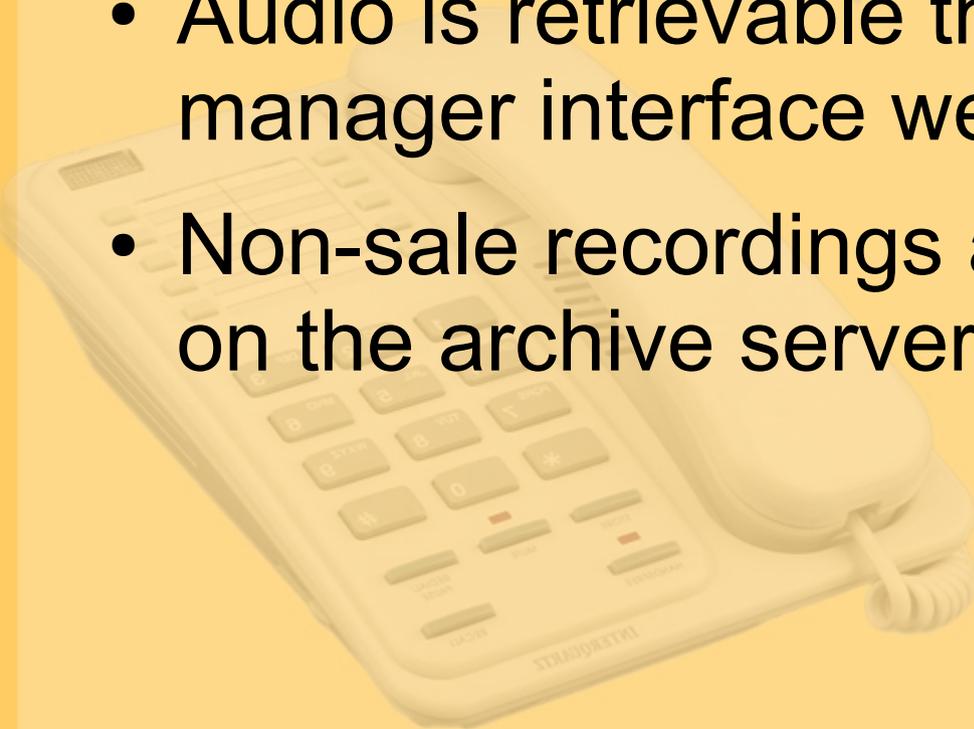
Case Study: Manager Interface

- Call centre manager screen:
 - Web-based VICIDIAL manager screen in Firefox
 - All reporting for agent and campaign performance is web-based
- Blind monitoring of agents possible through cordless phone going through ATA VOIP adapter or soft-phone on manager computer



Case Study: Audio Recording

- All calls are recorded in Asterisk to local RAM drives, then mixed to local hard drive, then compressed into MP3 audio format, then sent by FTP to the audio archive server.
- Audio is retrievable through the VICIDIAL manager interface web pages
- Non-sale recordings are purged after a set time on the archive server



Case Study: Administration

- Minimal Systems Administration needed for ongoing operations
- Log files and temporary recordings are automatically purged regularly
- Leads can be loaded by web-based form or directly through ODBC connection
- Some small configuration changes require configuration file editing, everything else is managed through web-based administration

Case Study: Costs

- 7 new servers purchased: \$30,000
- 4 x Quad T1 cards: \$6,000
- Existing Agent stations used: \$0
- Existing IT staff time: already budgeted
- Consultant setup costs: \$20,000
 - Includes installation and several customizations of the software
- Ongoing guaranteed support: \$12,000/year
- All licensing: \$0

Live Demo of Agent/Manager Screens

VICIDIAL Campaign: TESTCAMP

DIAL LEVEL: 2.383 TRUNK SHORT/FILL: 0 / 0
 .min. MAX LEVEL: 8 DROPPED MAX: 3% TAR...
 DIAL TIMEOUT: 21 TAPER TIME: 2130 LOC...
 DIALABLE LEADS: 333952 CALLS TODAY: 100697 AVG...
 HOPPER LEVEL: 2000 DROPPED / ANSWERED: 783 / 26730
 LEADS IN HOPPER: 1994 DROPPED PERCENT: 2.93%

[VIEW USER GROUP](#) [SHOW AGENT ID](#) [HIDE SERVER INFO](#)

16 calls being placed 16 calls ringing 0 calls v...
 8 agents logged in 4 agents in calls 3 agents wait...

VICIDIAL: Agents Time On Calls Campaign: TESTCAMP

STATION	USER	SESSIONID	STATUS	SERVER IP
Exp/2-1	JAI ME SMITH	8600058	READY	10.10.10.53
Exp/2-1	SHIRLEY JOHNSON	8600067	READY	10.10.10.59
Exp/11-1	LINDA JONES	8600052	READY	10.10.10.59
Exp/3-1	SHANNON HANNOVER	8600060	INCALL	10.10.10.54
Exp/20-1	LENORIAS MILLER	8600065	INCALL	10.10.10.52
Exp/19-1	CAROLYNN POE	8600064	INCALL	10.10.10.52
Zap/11-1	BELINDA KELLEY	8600081	INCALL	10.10.11.21
Exp/15-1	SHERRY BAKER	8600051	PAUSED	10.10.10.59

8 agents logged in on all servers
System Load Average: 0.07

- Agent waiting for call
- Agent waiting for call > 1 minute
- Agent waiting for call > 5 minutes
- Agent on call > 10 seconds
- Agent on call > 1 minute
- Agent on call > 5 minutes
- Agent Paused > 10 seconds
- Agent Paused > 1 minute
- Agent Paused > 5 minutes

VICIDIAL web client - Mozilla Firefox

Logged in as User: 6666 on Phone: IAX2/firefly01 to campaign: TESTCAMP

VICIDIAL SCRIPT 2006-04-21 17:41:08 session ID: 8600081 NO LIVE CALL

STATUS:

seconds: Channel: Cust Time:

RECORDING FILE:
60421173831_6666_7275554032

RECORD ID: 1076160

Customer Information:
 Title: First: MI: Last:
 Address1:
 Address2: Address3:
 City: State: PostCode:
 Province: Vendor ID:
 Phone: DialCode: Alt. Phone:
 Show: Email:
 Comments:

Disposition Hot Keys: When active, simply press the keyboard key for the desired disposition for this call. The call will then be hungup and dispositioned automatically.

1 - A - Answering Machine	4 - DNC - DO NOT CALL
2 - N - No Answer	5 - DC - Disconnected Number
3 - NI - Not Interested	6 - B - Busy
	7 - XFER - Call Transferred

VICIDIAL web-client version: 1.1.76 BUILD: 60421-1229 Server: 10.10.11.21

[Show conference call channel information](#)

Thank you!

For more information, go to:

www.eflo.net

