CASE STUDY: Call Center Solution for 200 Seats Across Four locations

by
Matt Florell

Before Asterisk (3 years ago)

- One location, two separate systems, 48 seats
  - Inbound ACD – Comdial with 2 x T1s and 24 phones
  - Outbound Predictive Dialer – Noble Systems 2 x T1s and 24 seats
- Closed systems not connected in any way
- No API, difficult data in/out
- Both were Proprietary with license restructions
- Very expensive to expand and expensive to do custom functions

Testing Potential Solutions

- Bayonne trials and IVR integration with Comdial ACD (very messy but worked and much cheaper than Comdial-only option)
- Evo-dialer – telnet and channelbanks to hosted solution (proprietary Dialogic dialer, lots of operational problems, not FTC-compliant and expensive)
- Asterisk trials with single T1
  - Basic inbound ACD with agents
  - Simple outbound list dialing app with Asterisk
  - CallerID with Database lookup integration

Asterisk in Production - First Stage

- 15 seats inbound with ACD and CallerID
- 15 seats outbound manual list dialing
- All integrated on single system with shared logs in a database
- Crude Perl/Tk client application
- Basic campaign and list management web page
- GPL'd our software suite (astGUIclient)

Stage Two – Expanding the Call Center

- Doubled the size of call center (60 seats)
- Launched basic predictive dialing (VICIDIAL)
- Created custom inbound queueing system
- Unified the inbound and outbound Perl/Tk GUI apps to allow for blended or flex agents
- Added more features to campaign/list management
- Created centralized, expandable recording archive and lookup system

Stage Three – Remote Rooms

- First remote room 15 seats
- Local server, database and T1s
- Phone connectivity over T1 lines only
- No central recording archiving
- No remote blind monitoring

Stage Four – More Expansion Everywhere

- Expanded to 120 seats at main office
- Expanded existing local room to 24 seats
- Opened another local room with 34 seats
- Set up new room in Miami with 24 seats
- Linked all rooms through IAX2 connections on the same providers' networks
  - Transfer calls between offices with a mouse click
  - Reduce inter-office telco costs
- Created unified blind monitoring system for Quality Control across all rooms
- Enhanced centralized recording archiving and backup systems

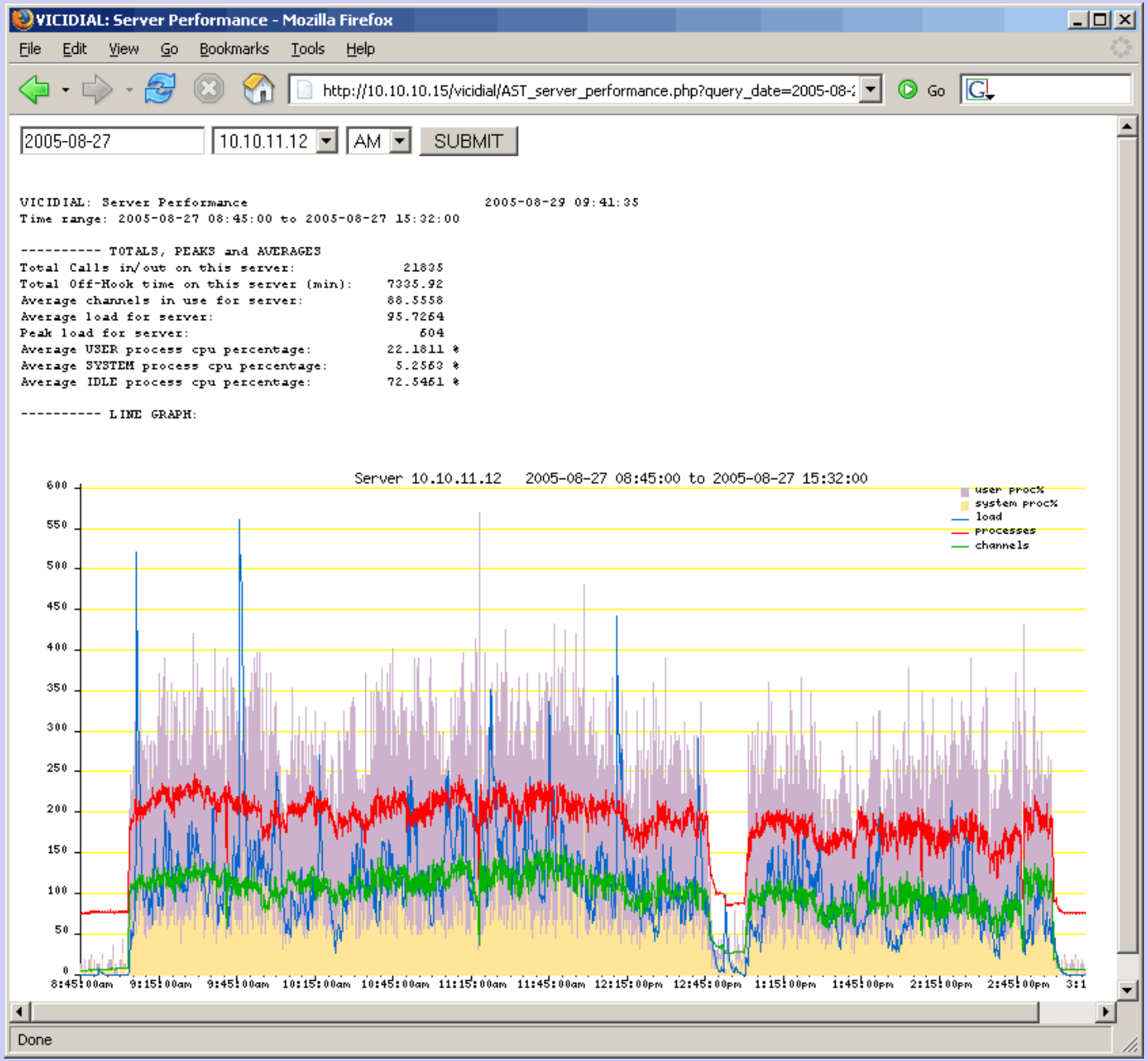
Call Centers

Multiple rooms with 6 to 30 agents per room for different campaigns

More System Enhancements

- Remote agents not at an office can be agents for inbound and outbound calling, just need a phone and computer
- Web-based client app created
- More Administrative reports
- Added server performance and monitoring
- More campaign options:
  - Custom outbound CallerID
  - Fronter/closer for outbound
  - Alternate outbound transfer scripts
  - Dial-timeout setting
  - HotKeys for quick call dispositioning

System Performance Monitoring



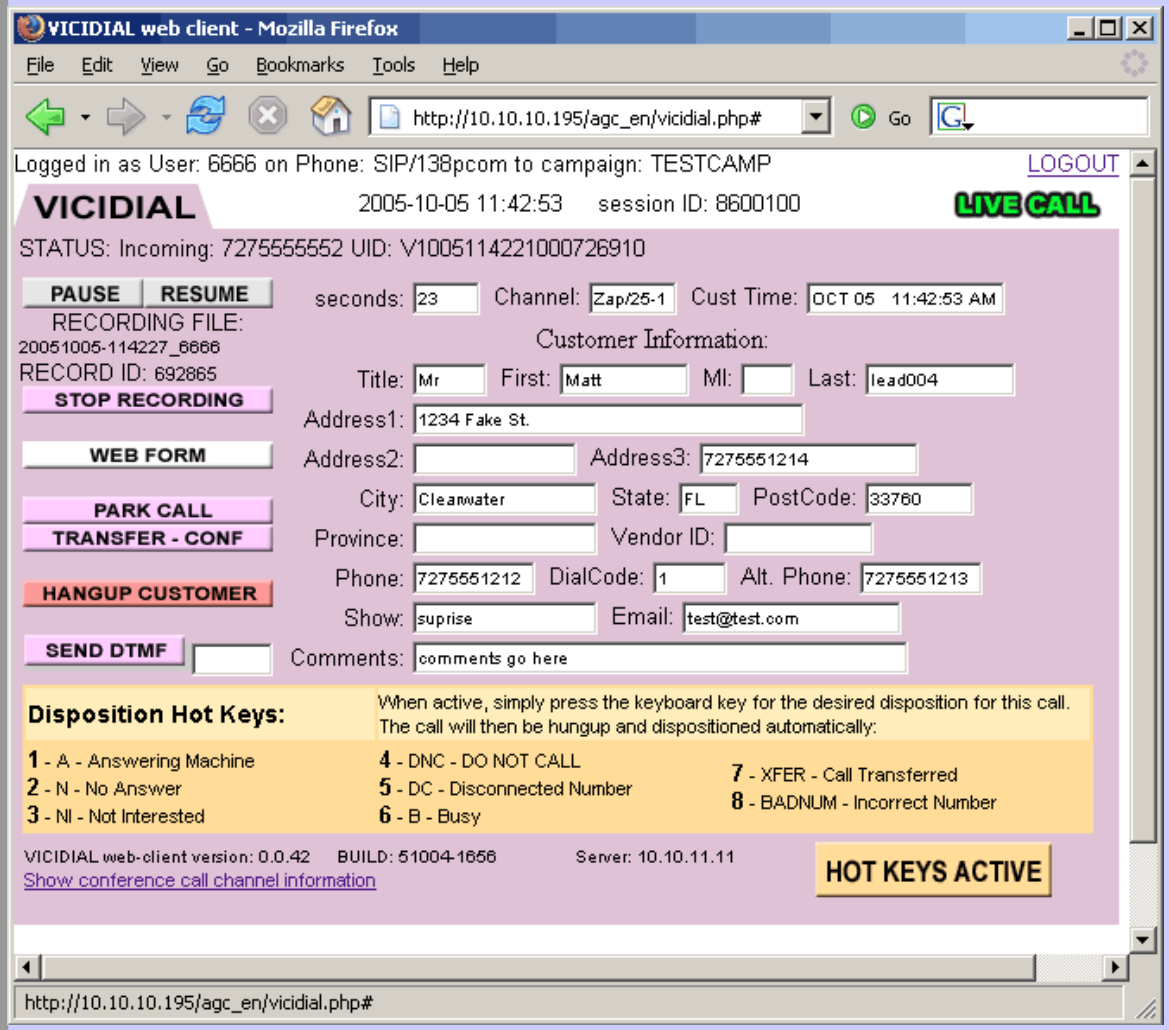
Architecture of the Servers

- Pentium 4 - 3.2GHz - 2GB RAM
- Asus Motherboards
- Slackware 10.1 with custom kernel
- Asterisk 1.0.7 on most with 1.2b1 on two
- T1 cards:
  - Digium – T100P, T400P, TE405P/10P, TE406P
  - Sangoma – A104
- Each server can handle 24-48 agents depending on dial level and function
- Dedicated Database Server- MySQL 4.0.XX or better
- Dedicated web server- Apache/PHP

Client Phones

- Phones are mostly cheap $10 analog phones with headsets hooked up to ATAs or ChannelBanks
  - Sipura SPA-2000 for ATAs
  - Recertified Zhone Zplex for channelbanks
  - Manager and admin phones(Polycom, Snom)

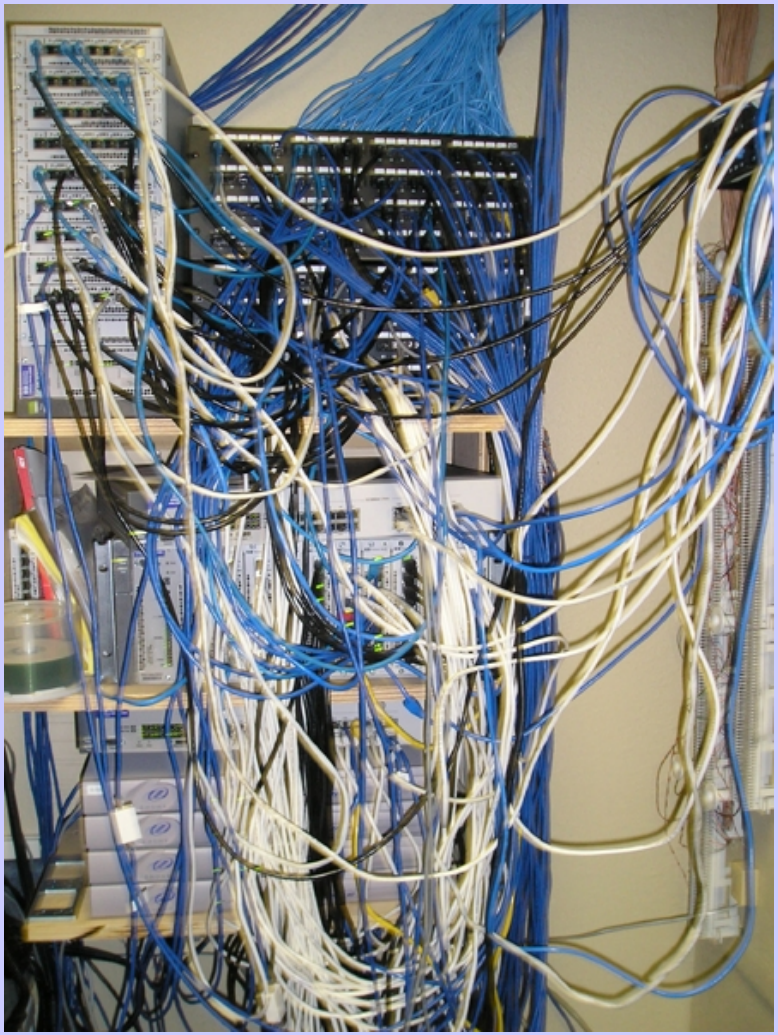
Client Computers



- Agent Computers vary from room to room
  - RedHat Linux 9.0 and Fedora Core 2
  - Also works with Windows and MacOSX
  - All are P3 500MHz(AMD 700MHz) or better
  - FireFox Web Browser 1.0 or higher

Network Architecture

- Local networks
  - HP Procurve Switches
  - Linux firewall for each network connection at each location
  - VOIP phones on separate network switches from computers
- Internet access
  - Primary is Cable
  - Failover is DSL
  - Both are relatively cheap and fast to get installed, one is always up if is other is down



Cost Comparison

- Proprietary system of same size, 200 seats, inbound and outbound taken from price quotes from three enterprise call-center vendors:
  - Cost for servers, software and phones: $500,000 - $1,000,000
  - Computers with Windows on each $90,000 including WinXP Pro
  - Maintenance and Service contracts $120,000 - $200,000/year
  - Software Customization $150+ an hour if possible, must go through quote process for each request

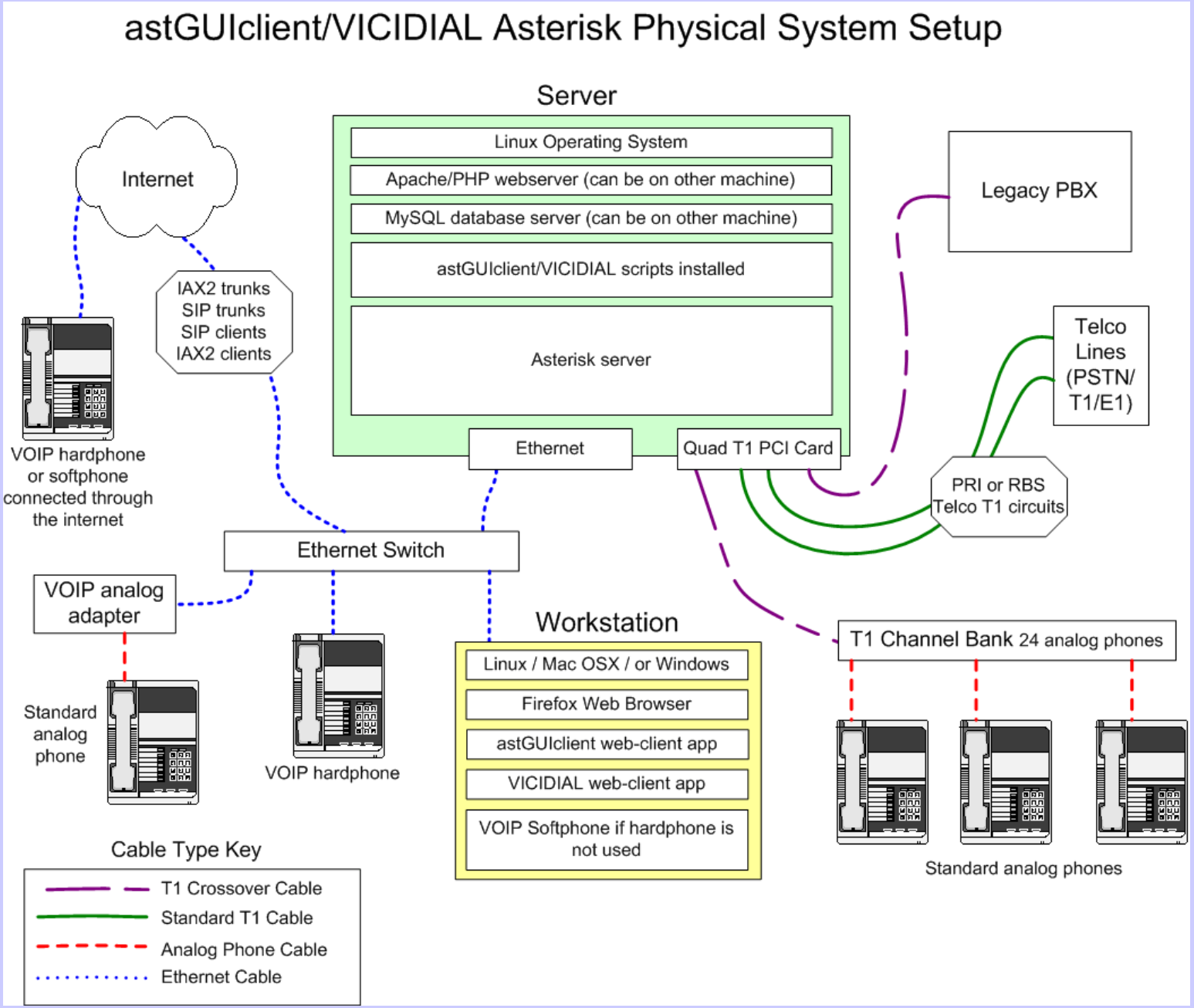
Internal Costs

- Our Internal 200 seat Call Center costs:
  - Servers (Asterisk, DB, Web and Archive servers), Software (developed in house and GLP) and Phones (analog, plus ATAs or Channel Banks) $60,000
  - Computers (built in-house from new components) $50,000
  - Maintenance, service and software customization handled by full-time PC tech and current IT staff

Systems Usage Stats

- Peak calls in and out handled in one 24 hour period on the entire system – 400,000 (AUS, UK & USA)
- Peak calls in and out handled in one 24 hour period on one server – 70,000 (AUS, UK & USA)
- Peak agents(local, remote and virtual) active on all systems at one time – 220
- Peak number of calls placed outbound in one month – over 5,000,000

Sample astGUIclient/VICIDIAL setup



Learn more about our setup and astGUIclient/VICIDIAL at our booth at the Asterisk Solutions Showcase tonight and tomorrow